DOCUMENT RESUME

ED 393 785 SO 026 250

AUTHOR	Rollans, Maureen
TITLE	A Handbook for Teaching Archaeology in Saskatchewan Schools.
INSTITUTION	Western Heritage Services, Inc. Saskatoon (Saskatchewan).
SPONS AGENCY	Saskatchewan School Trustees Association, Regina.
PUB DATE	92
NOTE	119p.; Also funded by the Saskatchewan Family Foundation, Heritage Branch and Saskatchewan Research Council.
AVAILABLE FROM	Western Heritage Services, Inc., 563 Fifth Ave. N., Saskatoon, Saskatchewan, S7K 2R1 Canada.
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Anthropology; *Archaeology; Art Education; Canada Natives; Canadian Studies; Curriculum Guides; Elementary Secondary Education; *Enrichment Activities; Ethnography; Foreign Countries; *Interdisciplinary Approach; Language Arts; Mathematics; Multicultural Education; Resource Materials; Social Studies
IDENTIFIERS	Native Studies; Saskatchewan

ABSTRACT

This handbook is a general resource to assist Saskatchewan, Canada educators in preparing archaeological units of study for their classrooms, or in using archaeological concepts in existing units of study. Divided into nine chapters, including the introduction (chapter 1), each contain different sources of information. Chapter contents include: (2) contains background information about archaeology, including an introduction to the subject and Canadian heritage legislation; (3) reviews the precontact and early historic periods of Saskatchewan; (4) discusses archaeology as a career; (5) is a case study of how one Saskatchewan archaeological site has been studied; (6) is a discussion of how archaeological themes can be integrated into a number of content areas; (7) describes 10 different kinds of classroom and outdoor activities, suitable for a variety of grades and areas of study, and reflecting the multidisciplinary nature of archaeology; (8) is an annotated list of resource materials; (9) contains information about some of the different archaeological groups who do work with the public in Saskatchewan and abroad; and (10) is a glossary of archaeological terms used throughout the handbook. (DQE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 393 785

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL
HAS BEEN GRANTED BY
Maureen Rollans

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

A HANDBOOK FOR TEACHING ARCHAEOLOGY IN SASKATCHEWAN SCHOOLS

By Maureen Rollans
Western Heritage Services, Inc.

Funded by

Saskatchewan Family Foundation, Heritage Branch
Saskatchewan School Trustees Association
and
Saskatchewan Research Council

SO 026250

BEST COPY AVAILABLE

ACKNOWLEDGEMENT

The author would like to acknowledge the assistance of the Saskatchewan School Trustees Association, the Heritage Branch of Saskatchewan Family Foundation, and the Saskatchewan Research Council. Without their financial support, this project would never have been attempted.

Thanks also to my reviewers, both from the educational and archaeological communities. These include Gail Bear, Ronald Boden, Carol Casswell and her associates at the Regina School Division, Jim Finnigan, Carlos Germann, Terry Gibson, Carol Hibbert, Tim Jones, David Meyer, Bill Rollans, Shaun Ross, Susan Voitka and her associates at Greystone Heights School, Ernie Walker and Dale Yellowlees.

Thanks finally to Phyllis Lodoen for several excellent original pen illustrations that are contained within these pages.

First published by Saskatchewan Research Council in 1990. Revised by Western Heritage Services in 1991 and again in 1992. Copies available from

Saskatchewan School Trustees Association
400 - 2222 Thirteenth Avenue
Regina, Saskatchewan
S4P 3M7

Western Heritage Services
563 - 5th Avenue North
Saskatoon, Saskatchewan
S7K 2R1

TABLE OF CONTENTS

Acknowledgement i

CHAPTER 1: Introduction to the Handbook 1

CHAPTER 2: Archaeological Background Information 3
  Introduction to Archaeology 3
  Archaeological Inventory 3
  Testing and Excavation 4
  Recording Location and Context 5
  Dating a Site and Materials within a Site 8
  After Excavation 10
  Further Reading 11

CHAPTER 3: The Precontact and Early Historic Periods in Saskatchewan 13
  The Precontact Period In Southern Saskatchewan 13
    Pleistocene Hunters Period 13
    Early Precontact Period 13
    Middle Precontact Period 16
    Late Precontact Period 17
  The Precontact Period in Northern Saskatchewan 18
    Athabasca/Transition Forests 20
    Boreal Forest 20
  Historic Period 22
  Further Reading 22

CHAPTER 4: Careers in Archaeology 25
  Aspects of the Job 25
  Archaeological Specializations 25
  Educational Requirements 26
  Job Opportunities 27
  Further Reading 28

CHAPTER 5: An Archaeological Case Study 29
  An Introduction to Bushfield West 29
  Assessment of the Site 29
  Excavation of the Site 30

Results and Interpretations 31
Conclusion 32

CHAPTER 6: Archaeology and Curriculum 33
  Required Areas of Study 33
  Grade Level 35
    Grade 1 35
    Grade 2 35
    Grade 3 36
    Grade 4 36
    Grade 5 37
    Grade 6 39
    Grade 7 41
    Grade 8 42
    Grade 9 44
    Grade 10 45
    Grade 11 46
    Grade 12 47
  Archaeology and the Common Essential Learnings 47

CHAPTER 7: Classroom and Outdoor Activities 49
  1. Newspaper Stratigraphy 49
  2. Climate Change/Culture Change 50
  3. Making Maps 52
    3A. Making a Mapping Board 52
    3B. Mapping a Site 53
  4. Cemetery Archaeology 56
  5. Art Activities 61
    5A. Making Prehistoric-styled Pots 61
    5B. Pottery Puzzles 62
    5C. Rock Art 63
    5D. Beading 65
  6. Solving Artifact Mysteries 68
  7. Analysis and Classification 70
  8. Garbage Can Archaeology 71
  9. Simulated Excavation 73
  10. Field Trips 74
    10A. Tours of Archaeological Excavations 74
    10B. Trips to Archaeological Sites Without Excavations 76

CHAPTER 8: Resource Materials Available 79
  Fact Sheets 79
  Videotapes and Films 81
  Filmstrip and Slide Sets 85

Artifact Replicas 86
Multimedia Kits 87
References for Teaching Archaeology in Schools 87
Periodicals 88
Other Publications 89
Books and Periodicals 91

CHAPTER 9: Public Archaeology in Saskatchewan 101
Saskatchewan Heritage Branch 101
Saskatchewan Archaeological Society 102
Wanuskewin Heritage Park 103
Western Heritage Services 104
Saskatchewan Museums 105
Volunteer Opportunities 105
Further Reading 106

CHAPTER 10: Glossary of Archaeological Terms 109

7

CHAPTER 1:
INTRODUCTION TO THE HANDBOOK

As the study of people through the ages, from the first human inhabitants of the earth to people in all parts of the world today, anthropology is a vast and fascinating topic of study. It seems that today, more than ever, we need to gain the perspectives that anthropology can provide in order to come to terms with the fact that our way of doing things is not the only way, nor is it necessarily the best way. By understanding how humans relate to each other and to their physical environment, we improve our ability to make responsible decisions that take into account the consequences of our actions on our environment and social relationships.

Archaeology is a subdivision of anthropology which deals specifically with the study of past human activity by finding, describing and explaining the materials that people have left behind. In these investigations, it is necessary to go to the site of the activity, uncover the evidence, gather all available clues, and finally interpret what activities occurred. Archaeology provides us with the perspective of change in human activity through time, and differences among groups of people.

There are so many reasons to include archaeology in school curriculum, not necessarily as a separate course, but within existing core areas of study. Archaeology provides the subject matter for a wide variety of "hands-on" individual and group activities that stimulate student interest, independent learning, social interaction, and communication (see Chapter 6, in this volume). These exercises can also develop critical and creative thinking: from rudimentary levels such as classification, through making inferences and developing hypotheses, and finally to high level skills such as developing and testing alternative hypotheses, and using research results to develop broad generalizations about culture. The skills involved in archaeological research and interpretation include manipulation of numbers, graphing, and computer literacy. The multidisciplinary nature of the subject makes it a useful umbrella under which a variety of required areas of study can be taught. Perhaps most importantly, archaeology is an exotic and fascinating subject for most people, and is capable of capturing even the imagination of students who might otherwise lack interest in academic pursuits.

This handbook is a general resource to assist Saskatchewan educators in preparing archaeological units of study for their classrooms, or in using archaeological concepts in existing units of study. It is divided into nine chapters, including this introduction, each containing different sources of information. Chapter 2 contains background information about archaeology, including an introduction to the subject and heritage legislation. In Chapter 3, the precontact and early historic periods of Saskatchewan are reviewed. Chapter 4 discusses archaeology as a career. Chapter 5 is a case study of how one archaeological site has been studied in Saskatchewan. Chapter 6 is a discussion of how archaeological themes can be integrated into a number of areas of study. In Chapter 7, ten different kinds of classroom and outdoor activities are described; these are suitable for a variety of grades and areas of study, reflecting the multidisciplinary nature of archaeology. Chapter 8 is an annotated list of resource materials (some available locally) which could be used by teachers and students in their study of archaeology. Chapter 9 contains information about some of the different archaeological groups who do work with the public in Saskatchewan and abroad. And finally, Chapter 10 is a glossary of archaeological terms used throughout this handbook.

Words that are included in the glossary are underlined the first time they appear in the handbook text.

CHAPTER 2:

ARCHAEOLOGICAL BACKGROUND INFORMATION

INTRODUCTION TO ARCHAEOLOGY

Archaeology is the study of past human activity by finding, describing and explaining the materials that people have left behind. One of the most common misconceptions is that archaeology is the study of all ancient animal forms (for example, dinosaurs). In fact, those investigations are part of the science of palaeontology.

Archaeological research begins with choosing a problem. The problem can range from having to recover as much information as possible in a limited amount of time if a site is in danger, to wanting to test a specific theory about how people behave. Once a problem is identified, the archaeologist must decide where to do the research (the study area), and the best methods to use.

Before looking for archaeological materials in the study area, the archaeologist must obtain a research permit from the provincial government (see information on the Saskatchewan Heritage Branch in Chapter 9). Because archaeological materials are protected by legislation, you need to have both a good reason for doing the research and the qualifications to carry out the research properly.

After much planning, the archaeologist is finally able to leave the office and do the most well-known part of the research—fieldwork.

ARCHAEOLOGICAL INVENTORY

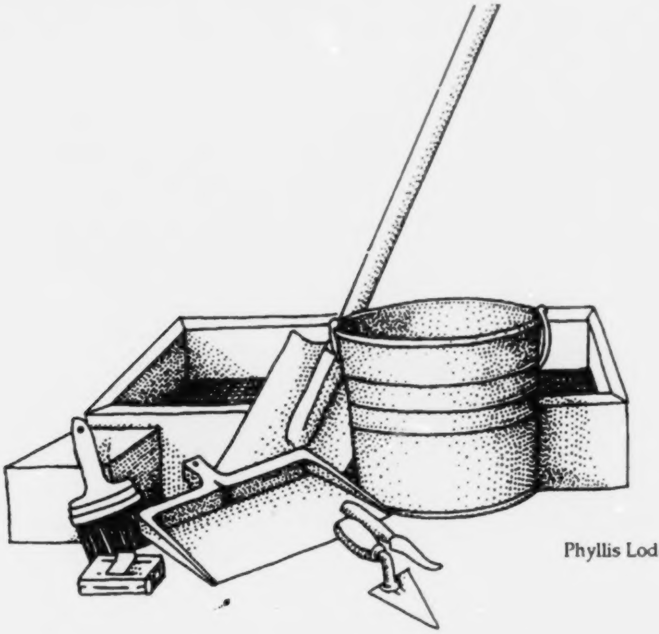
Unless the research problem requires the study of specific archaeological sites, the first part of archaeological fieldwork is to take an inventory of all sites in the study area. A site is a location which contains evidence that people performed some activity there in the past. Sites are recognized by finding artifacts and features left behind by people in the past.

An artifact is anything which has been made or changed by humans. However, many items, particularly those that have been used by humans but not changed, have an archaeological importance that is not easily recognized unless they are found closely associated with other items or artifacts. For example, rocks in fields are common and not usually of interest to archaeologists; however, if an archaeologist finds 50 rocks arranged in a circle, this cultural feature provides a clue about the structures that people built at that site.

A site can be found in a number of ways. Often sites are discovered, perhaps accidentally, by ordinary people who then contact an archaeologist. But usually archaeologists look for sites. They survey by walking along lines, a set distance apart to that they get consistent coverage over the study area. While surveying, they for artifacts or features on the ground surface, or in places where the sub-surface is made visible, such as in rodent burrows or along the eroded banks of streams. To find buried sites, they may dig into the ground in areas that seem likely to contain sites because of suitable vegetation or landscape.

TESTING AND EXCAVATION

If sites are found during an inventory, they are marked on maps. Then they are tested (or assessed) to find out how important the site is—will it help answer the research problem? Assessment can involve collecting all of the artifacts lying on the surface of the field, and carefully mapping the location of each item. Or it may involve using shovels to dig a series of square test pits; these tests give the archaeologists an idea of how deep the site is buried, and if parts of the site remain undisturbed below the ground surface.



Phyllis Lodoen

Figure 1: Some of the tools used in archaeological excavation

A site is only excavated if the assessment indicates that a site will be productive in archaeological materials that are important to the problem at hand. Archaeological excavation is a slow and careful process. Archaeologists carefully scrape soil away with pointed trowels or carefully manoeuvred shovels, and collect the soil in buckets. Artifacts are left in place for as long as possible, while dirt is brushed away from around them. They are only removed after the archaeologist has had a chance to observe the relationships among the artifacts in the area being excavated. The archaeologist dumps the bucket of excavated soil into a shallow box with screen mesh forming the bottom; the dirt falls through the screen and the archaeologist has one last chance to find the artifacts. Detailed notes are recorded at each stage of the excavation.

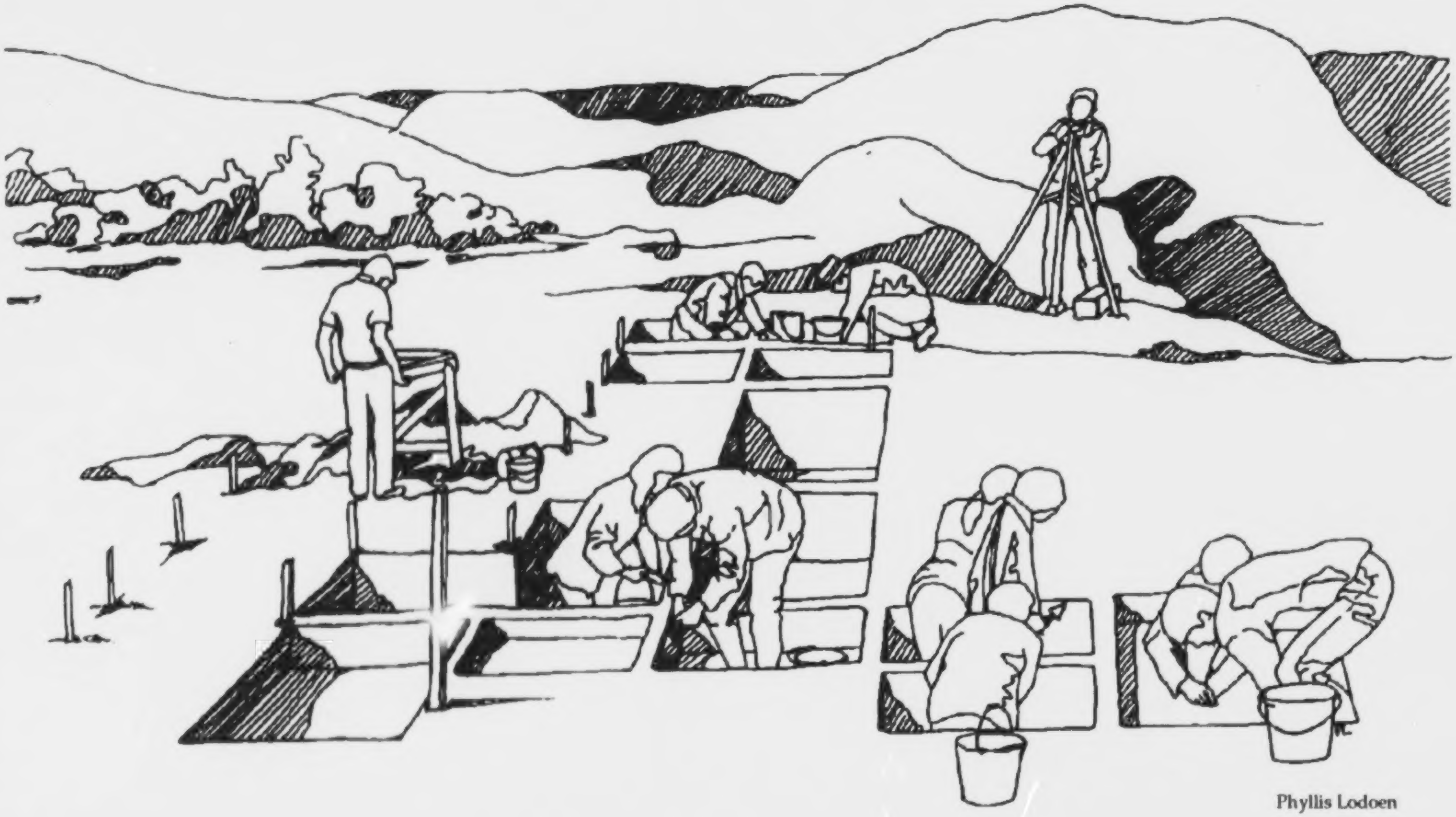
Excavation is an expensive and time consuming activity which involves destroying part of the site, and possibly destroying the information for which future archaeologists may be searching. Therefore, not every site that is discovered is excavated, and even sites which are excavated are rarely fully excavated. However, some archaeological sites are in danger of disturbance or destruction by natural processes (for example, erosion) or modern developments (for example, dam construction). It is necessary to study these sites in unusual detail because important information might otherwise be lost. To future archaeologists, access to the complete records and the artifact collection from the excavation of a site is the next best thing to personally digging there.

RECORDING LOCATION AND CONTEXT

Archeologists do not excavate in a random fashion. On the horizontal plane, they usually divide their site into a pattern of squares called a grid. One corner of the grid is the designated reference point, called the datum. Each square, or unit, of the grid is generally one square metre. Each unit is given two coordinate numbers indicating its position in relation to the datum (for example, unit 60N 85W would be the unit at the intersection of 60 m on the N-S axis and 85 m on the E-W axis).

The archaeologist digs in only one unit at a time. In order to interpret what people were doing at a site, and when they were there, archaeologists must keep records of artifact provenience—measurements indicating precisely where each artifact was found within a specific unit. Each artifact that is collected during excavation is placed in a bag labelled with all of the provenience information. In that way, archaeologists can reconstruct the site in the laboratory, by plotting artifact locations. By studying these plots, archaeologists can study how artifacts are associated in groups, and what those groups can reveal about human activity.

Recording an artifact's context—information about the soil and other artifacts around it—is also important in interpreting what activities occurred at a site. For example, if artifacts are found within ash, notes of that fact must be kept—the ash



Phyllis Lodoen

Figure 2: Archaeologists excavating a site. Individuals work in square units set up in a grid arrangement. Dirt that is excavated is sifted through screens. The individual in the background is preparing to map the site with a surveyor's transit and tripod.

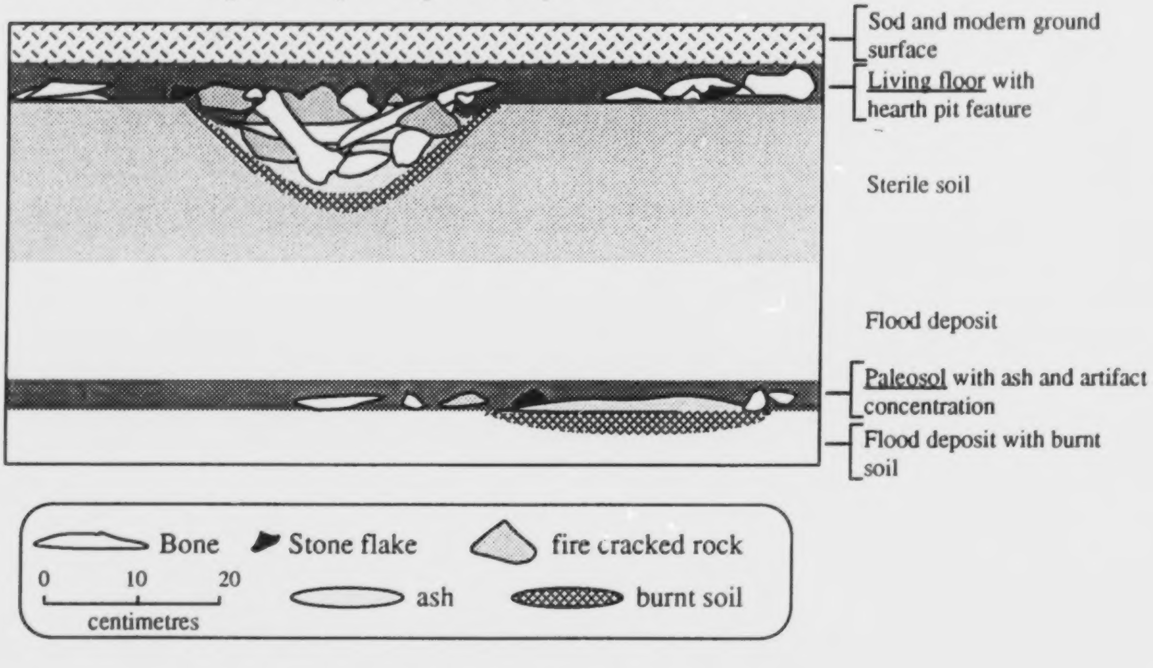
13

feature should be photographed and mapped (artifact locations noted and sketched). Although the ash itself is not always collected, it is an important clue to the human activities associated with the artifacts. Another example would be a projectile point sticking into a bone: an important relationship could be overlooked if the artifacts were separated during excavation and no notes of their association kept.

Another aspect of the context of the artifact are the non-artifacts, also called the matrix, that surround the artifact. This material contains clues used in paleoenvironmental (past environments) studies. The size of the sediment grains in the matrix can reveal whether the site was in an area that was flooded regularly, or whether it was in a low area where strong winds usually dropped their sediment load. When found in archaeological sites, seeds and pollen from plants can reveal the vegetation at the site and the surrounding area. In conjunction with the vegetation remains, the remains of small animals such as snails and insects can provide clues about the climate at the time that the site was occupied.

Archaeologists must also control the vertical scale of their excavations because the depth of artifacts in the soil is another important aspect of artifact provenience. The arrangement of the layers of sediment at a site is called stratigraphy (Figure 3). Stratigraphy is important in determining vertical relationships among artifacts. Artifacts found within the same soil layer, or strata, were all deposited at approximately the same time. On the other hand, artifacts found in different strata were deposited

Figure 3: A drawing of the stratigraphy at an archaeological site showing two occupation layers separated by sterile soil.


Sod and modern ground surface
Living floor with hearth pit feature
Sterile soil
Flood deposit
Paleosol with ash and artifact concentration
Flood deposit with burnt soil
Bone
Stone flake
fire cracked rock
0
10
20
centimetres
ash
burnt soil

at different times, perhaps by completely different people. For that reason, archaeologists must excavate in layers—preferably in natural strata. If natural strata are difficult to identify, archaeologists excavate in arbitrary levels, in order to keep some control of depth and relationships among artifacts.

Notes about provenience and context are kept on level record forms (see Figure 4). These are standardized forms which are filled out for each level of each unit which is excavated. The forms have spaces for writing information about what unit was dug, how deep the level was, what was collected, and observations about the matrix, unusual associations of artifacts, and any other useful information.

DATING A SITE AND MATERIALS WITHIN A SITE

There are a number of ways of finding out the age of archaeological materials. Relative dating is determining the age of something in comparison with something else excavated at the same site, rather than determining the age in years. The theory behind the most common form of relative dating is the law of superposition: sediments are deposited layer upon layer. Because artifacts are found within these strata, archaeologists apply the same law to them. If a site has not been disturbed, deeper artifacts were deposited by humans before the more shallow ones—that is, the deeper the artifact, the older it is. However, there is no direct relationship between the depth and the number of years since the rate at which sediments are deposited at a site is never constant. This type of relative dating cannot be used in comparing different sites, since the depositional rate at each site is unique due to the different natural forces at work. An absolute date, or the age of a site in years, is more difficult to determine.

Some materials such as bone or charcoal can be Carbon-14 dated. Radioactive Carbon-14 is present in the air in a fairly constant proportion to the non-radioactive Carbon-12. Plants and animals absorb carbon molecules into their cells when they breath, with a proportion of C-12 to C-14 equal to that found in the air. When the organism dies, the unstable C-14 decays into the stable C-12 at a very slow but known rate. The amount of C-14 remaining in an organic material can be measured and used to determine how many years have past since the plant or animal died.

Materials which have been heated to high temperatures (for example, pottery or fire-cracked rock) can be dated using a process called thermoluminescence (TL) dating. Minerals are exposed to natural radiation in the soil. As a result, these minerals give off light when heated, called TL. Heating to a high enough temperature erases all of the TL in the minerals. An object that was heated in the past is heated again in the lab. The amount of TL given off is measured to determine the amount of radiation the object has absorbed from the soil since the original heating occurred. Soil samples must also be collected from around the object so that the background radiation can be measured. The TL given off by the object can then be translated into

Figure 4: A level form used byWestern Heritage Services

TYPE OF UNIT
☐ Excavation
☐ Assessment

SCREEN SIZE
☐ 6 mm
☐ ________

Site Number/Name ____________________

Unit ____________________

Level ____________

LEVEL TYPE
☐ Arbitrary
☐ Natural/Cultural

LEVEL THICKNESS
☐ 5 cm
☐ ________

DEPTH
☐ Depth below Surface
☐ Depth below Datum

UNIT CORNER MEASUREMENTS

UPPER NE ________ NW ________ SE ________ SW ________

LOWER NE ________ NW ________ SE ________ SW ________

	NE	**NW**	**SE**	**SW**
Sterile				
Debitage				
Bone				
FCR				
Tools				
Pottery				
Other				
# bags				

☐ Matrix Sample
☐ Flotation Sample [to recover organic materials]
☐ ____________________
☐ Map of Unit
☐ Profile

NOTES: Matrix; Features; Samples; Disturbance; Concentrations; etc.

____

____

____

____

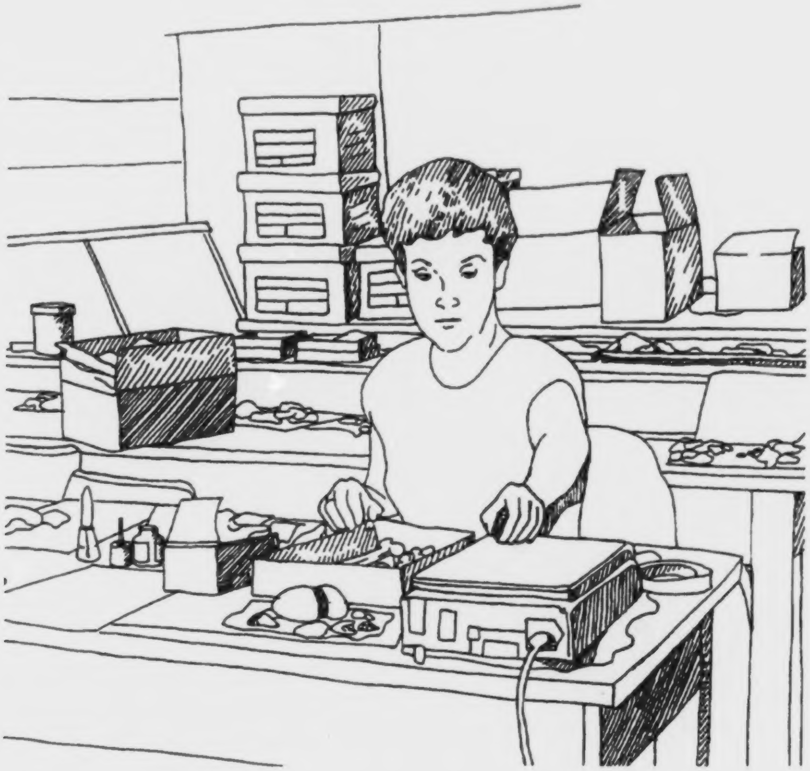
NAME: ____________________ DATE: ____________________

the approximate number of years that have elapsed since the original heating.

If there are no materials which can be absolutely dated in a site, dates can be approximated by comparing diagnostic artifacts such as projectile points or pottery to similar artifacts from sites at which absolute dates were obtained. This technique is called cross-dating. Artifact shapes illustrated in the timelines in Chapter 3 are diagnostic of particular time periods.

AFTER EXCAVATION

The fieldwork of archaeological inventory, assessment and excavation are only a small part of the archaeologist's job. For every month spent in the field, about three months must be spent in the laboratory processing and analyzing the information gathered (see Figure 5). In the laboratory, artifacts are cleaned and catalogued so that they can be permanently identified by number. Archaeologists study each artifact individually, taking measurements and making detailed descriptions.



Phyllis Lodoen

Figure 5: An archaeologist working in the laboratory, cataloguing and analyzing artifacts.

For each site, archaeologists have a responsibility to write a report describing not only what was found, but also describing the environment and history of the study area, the research problems investigated, the methods used. All of this information leads to conclusions about what the data reveal about human activity at the site. In order to draw conclusions about the data, the archaeologists must compare what they find to similar artifacts and features known from other sources. Important sources include other sites that have been excavated and people familiar with aspects of the group responsible for creating the site (for example First Nations Elders).

Thorough reporting of data and conclusions allows other archaeologists and members of the public to benefit from the knowledge obtained through the research. These reports are kept on file by Resource Management—Archaeology department of the Saskatchewan Heritage Branch, and are sometimes adapted for more widespread distribution. When the site reports are completed, the artifacts and artifact records are sent to the Museum of Natural History in Regina or another approved repository. There, they are stored, displayed or loaned to local museums. All artifact collections remain available for study by future researchers who have new questions to ask.

FURTHER READING

More detailed information about the science of archaeology can be obtained by reading or viewing the following material. These resources are described in more detail in Chapter 8.

Archaeological Survey of Alberta
n.d. "Dig and Discover: Archaeological Excavation for the Classroom." An unpublished fact sheet.

Cable Regina and the Saskatchewan Archaeological Society
1988 "Discovering Saskatchewan's Past," various episodes in this video series.

Cork, Barbara and Stuart Reid
1984 The Young Scientist Book of Archaeology. Highgate Press, Usborne Publishing Ltd., London.

Epp, Henry T. and Ian Dyck
1983 Tracking Ancient Hunters; Prehistoric Archaeology in Saskatchewan. Saskatchewan Archaeological Society, Regina.

Fladmark, Knut R.
1978 A Guide to Basic Archaeological Field Procedures. Publication #4, Department of Archaeology. Vancouver: Simon Fraser University.

Hackwell, W. John
1986 Digging to the Past; Excavations in Ancient Lands. New York: Charles Scribner's Sons

Resource Management—Archaeology
1991 Field Manual for Avocational Archaeologists. Saskatchewan Heritage Branch, Regina.

Hole, Frank and Heizer, Robert F.
1977 Prehistoric Archaeology: A Brief Introduction. New York: Holt, Rinehart, and Winston.

Museum of Natural History
The Past in Place. A film.

National Film Board of Canada and the Canadian Museum of Man
Digging Up Canada's History. A film strip series.

Robbins, Maurice and Irving, Mary B.
1981 The Amateur Archaeologist's Handbook (3rd edition). Cambridge: Harper & Row.

Saskatchewan Archaeological Society
"Studying Saskatchewan's Ancient Human History." A slide show.

CHAPTER 3:

THE PRECONTACT AND EARLY HISTORIC PERIODS IN SASKATCHEWAN

Human history in the province of Saskatchewan has been greatly influenced by our environment. That environment has changed greatly over the past 12,000 years. Figure 6 shows modern vegetation in the province.

THE PRECONTACT PERIOD IN SOUTHERN SASKATCHEWAN

This first section will deal with the precontact period in the plains and parkland areas of Southern Saskatchewan. It is based largely upon I. Dyck's summary in Epp and Dyck, 1984. A timeline illustrating the cultural sequences is presented in Figure 7.

PLEISTOCENE HUNTERS PERIOD

(TO 10,500 YEARS B.P.)

From the last advance of the glaciers until about 14,000 years ago (the exact date is uncertain), ice covered most of the Province and humans could not live here. Then slowly over the next 4000 years, the ice retreated northward and spruce forests and grasslands moved in from the south.

The end of the Ice Age, or Pleistocene epoch, is marked by the extinction of many species of large mammals such as mammoths, giant sloths, and camels. These extinctions take place about 11,500 B.P. At the same time, a human culture of big game hunters, known as Clovis, became established across much of North America. A continuing debate among archaeologists and paleontologists is whether human hunting contributed to the extinctions. In Saskatchewan, the only evidence of these hunters are large spear heads that have been found on the ground surface.

EARLY PRECONTACT PERIOD

(10,500 TO 7500 YEARS B.P.)

As the climate warmed, bison became the prominent animal in the plains environment. By about 9500 B.P., the grasslands reached their modern position near

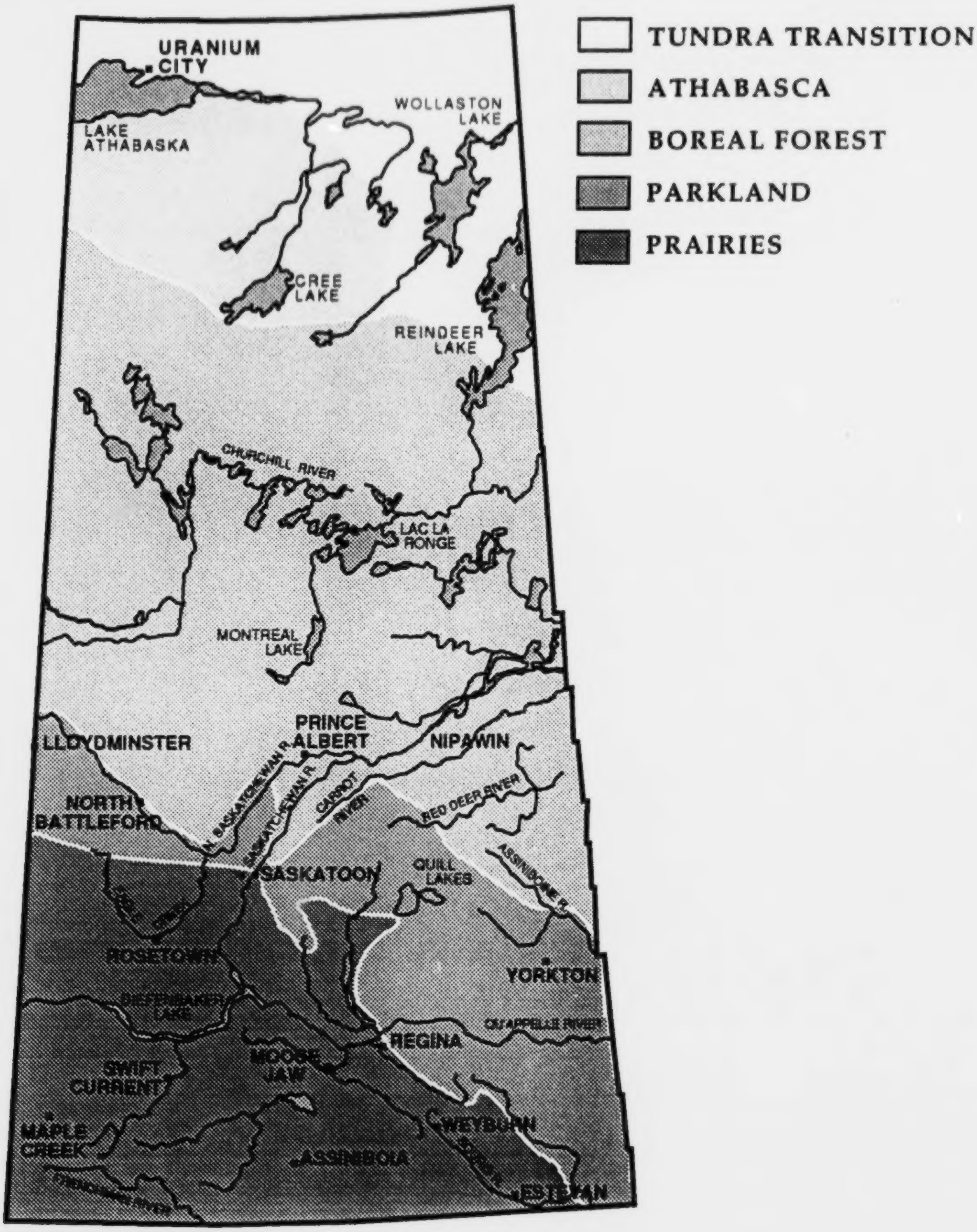
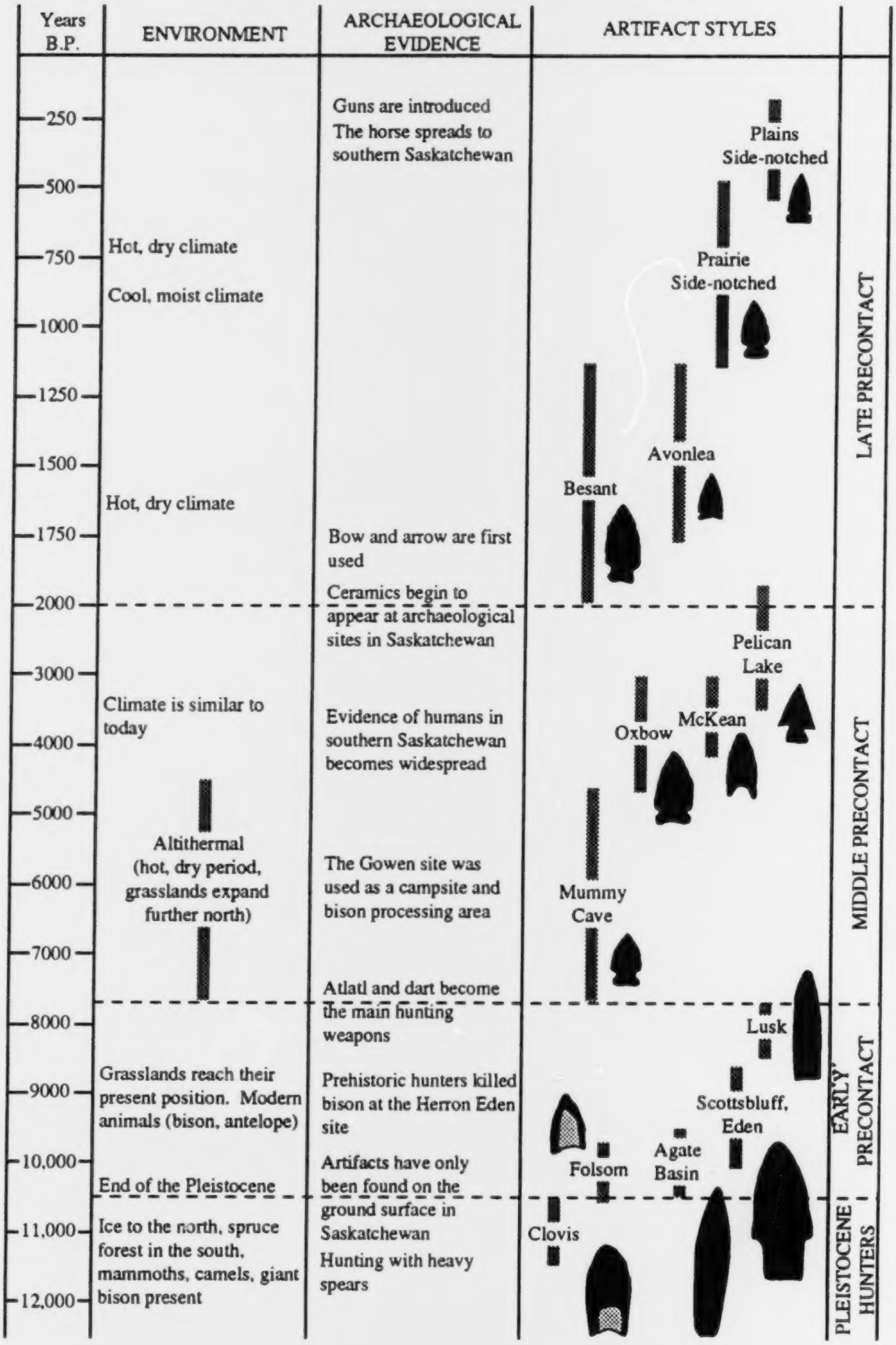

TUNDRA TRANSITION
ATHABASCA
BOREAL FOREST
PARKLAND
PRAIRIES
URANIUM CITY
LAKE ATHABASKA
WOLLASTON LAKE
CREE LAKE
REINDEER LAKE
CHURCHILL RIVER
LAC LA RONGE
MONTREAL LAKE
LLOYDMINSTER
PRINCE ALBERT
NIPAWIN
NORTH BATTLEFORD
N. SASKATCHEWAN R.
S. SASKATCHEWAN R.
CARROT RIVER
RED DEER RIVER
ASSINIBOINE R.
SASKATOON
QUILL LAKES
EAGLE CREEK
ROSETOWN
YORKTON
DIEFENBAKER LAKE
QU'APPELLE RIVER
REGINA
SWIFT CURRENT
MOOSE JAW
WEYBURN
SOURIS R.
MAPLE CREEK
ASSINIBOIA
FRENCHMAN RIVER
ESTEVAN

Figure 6: A map of Saskatchewan showing the modern vegetation zones. These zones have changed significantly over the past 12,000 years.

BEST COPY AVAILABLE

Figure 7: Timeline for southern Saskatchewan.



Years B.P.	ENVIRONMENT	ARCHAEOLOGICAL EVIDENCE	ARTIFACT STYLES	
250		Guns are introduced The horse spreads to southern Saskatchewan	Plains Side-notched	LATE PRECONTACT
500				
750	Hot, dry climate Cool, moist climate		Prairie Side-notched	
1000				
1250				
1500	Hot, dry climate		Avonlea Besant	
1750		Bow and arrow are first used		
2000		Ceramics begin to appear at archaeological sites in Saskatchewan	Pelican Lake	MIDDLE PRECONTACT
3000	Climate is similar to today	Evidence of humans in southern Saskatchewan becomes widespread	Oxbow McKean	
4000				
5000				
6000	Altithermal (hot, dry period, grasslands expand further north)	The Gowen site was used as a campsite and bison processing area	Mummy Cave	
7000				
8000		Atlatl and dart become the main hunting weapons	Lusk	EARLY PRECONTACT
9000	Grasslands reach their present position. Modern animals (bison, antelope)	Prehistoric hunters killed bison at the Herron Eden site	Scottsbluff, Eden	
10,000	End of the Pleistocene	Artifacts have only been found on the ground surface in Saskatchewan	Folsom Agate Basin	
11,000	Ice to the north, spruce forest in the south, mammoths, camels, giant bison present	Hunting with heavy spears	Clovis	PLEISTOCENE HUNTERS
12,000				

BEST COPY AVAILABLE

Saskatoon and the climate was more like it is today. Humans adapted to their changing environment by becoming more specialized, hunting mainly bison on the grasslands. This hunting specialization lasted until historic times, although the hunting technology changed. Most of the archaeological cultures of the Early Precontact Period (such as Folsom and Agate Basin) are known at this time only from surface finds of unique projectile point styles and associated artifacts such as scrapers, knives, and fleshers; this makes it difficult to determine details of the lifestyles of the people.

There are only two known buried archaeological sites from this period. The Heron Eden site near Prelate was first tested in the summer of 1989. There, more than 9,000 years ago, people killed large bison (perhaps an extinct giant species) using heavy spears tipped with stone points called Scottsbluff and Eden. Details from this site will unfold in the years to come. About 8,000 B.P., another group of people using Scottsbluff technology camped at the Niska Site near Ponteix.

MIDDLE PRECONTACT PERIOD

(7500 TO 1850 B.P.)

About 7500 years ago, the weather turned warmer and drier than today, and the grasslands extended about 100 km further north than their present position. During the driest and hottest periods, people probably had to take refuge in the parklands and other areas on the periphery of the plains. Sites in the heart of the plains are rare from this time period.

The atlatl and dart became the main hunting weapons during the Middle Precontact. The atlatl is a long wooden devise with a hook on one end which acts as an extension of the arm; when a stone-tipped dart which is hooked into the end of the atlatl is propelled, it flies much further and with more force than would be possible with the human arm alone. Smaller projectile points, called Mummy Cave, tipped these darts early in the Middle period (7700 to 4700 B.P.). The Gowen Site (see the first article by E. Walker in Linnamae and Jones, 1988) is a 6000 year old Mummy Cave habitation site and bison processing area located in what is now Saskatoon; it illustrates the success of the atlatl as a hunting weapon. The Norby Site in Saskatoon is a 5700 years old bison kill site. It was also from this period that the earliest evidence of humans in the area of Wanuskewin Heritage Park has been found, although earlier occupations may yet be discovered in the park (see the second article by E. Walker in Linnamae and Jones, 1988).

By 5000 B.P., the weather was more moist, and was gradually becoming much like what we experience today. Sites representing a full range of human activities have been found all over southern Saskatchewan dating from this time onward. This indicates that human activity increased greatly at this time. The Oxbow style of projectile point (4700 to 3050 B.P.) is one of the most common styles found on the plains; it is named after the site in southeastern Saskatchewan where it was first recognized. A separate group of points is found at sites which date from the same general time period as Oxbow—the McKean/Duncan/Hanna group (4150 to 3100 B.P.). Appearing during a time that was wetter than today, the culture named Pelican Lake (3300-1850 B.P.) is not as well known in Saskatchewan, although it is again named after a site in Saskatchewan; it is characterized by uniquely shaped, well made points and knowledge of bison jumping and pounding (corralling) techniques. These three archaeological cultures are also found up into the boreal forest (see "The Precontact Period in Northern Saskatchewan" which follows).

LATE PRECONTACT PERIOD

(2000 TO 170 B.P.)

It should be noticed that this period overlaps slightly with the previous period. This is due to the arbitrary nature of this classification system. The Pelican Lake dart point style continued up to 1850 B.P., while a new style called Besant appears at 2000 B.P. The division between the two periods is marked by the appearance of pottery in Saskatchewan's archaeological record with the Besant phase. These Besant style pots are generally conoidal shaped (see the Laurel pot in Figure 8), and made using a cord-wrapped paddle and an anvil.

Like projectile points, differences in pot shapes and designs is important in the study of time and cultural groups. By tracing similarities in style, it appears that pottery technologies may have been introduced to Saskatchewan from the east, where similar styles appear slightly earlier in the archaeological record. Pottery also allows some unique research opportunities, such as analysis of ancient finger prints to determine whether or not groups relied on specialists to make the majority of the community's pots.

Some archaeologists choose to group Besant with the Middle Precontact Period because of the continued presence of atlatl dart points in Besant sites. By 1750 B.P., a new culture called Avonlea appeared, in which the bow and arrow had replaced the atlatl and dart as the mostly popular hunting weapon. The new weapon improved the ability of people to hunt, enabling them to stay hidden as they shot their prey, and allowing a greater degree of accuracy. Avonlea was first recognized at a site in Saskatchewan. Avonlea arrow heads are small, thin, and well made. The ceramics of the culture are similar in shape to Besant, but are decorated differently. Avonlea and Besant cultures coexisted in southern Saskatchewan until 1150 B.P.

The climate had several fluctuations in the last 1000 years, from severe droughts lasting several hundred years to moist warm climates. The drought conditions greatly affected the ability of agricultural peoples living in the Missouri area south of Saskatchewan to maintain their farming lifestyle. However, the people in the Saskatchewan plains and parklands continued to be successful in their bison-hunting and plant gathering lifestyle. Prairie Side-notched points coexisted with and were succeeded by the more square-based Plains Side-notched points. The these later arrow heads are the most common style in Saskatchewan archaeological sites.

Even before Europeans arrived in the Province, their influence reached Saskatchewan through trading of goods among First Peoples groups. Horses filtered up from the south, and trade goods including guns came in from the east. These foreign influences forever changed the way of life in the plains and parkland. They increased the mobility of the Indians, their wealth (in some cases) and their ability to kill large numbers of animals. Many of the early historic descriptions of First Peoples groups were made after these changes had already taken place. Although archaeologists depend upon many of these historic accounts to find analogies for the materials they find in the archaeological record, they must take into consideration the vast changes that had already occurred. As Europeans came into the province, they also brought disease with them; epidemics of small pox devastated the First Nations peoples.

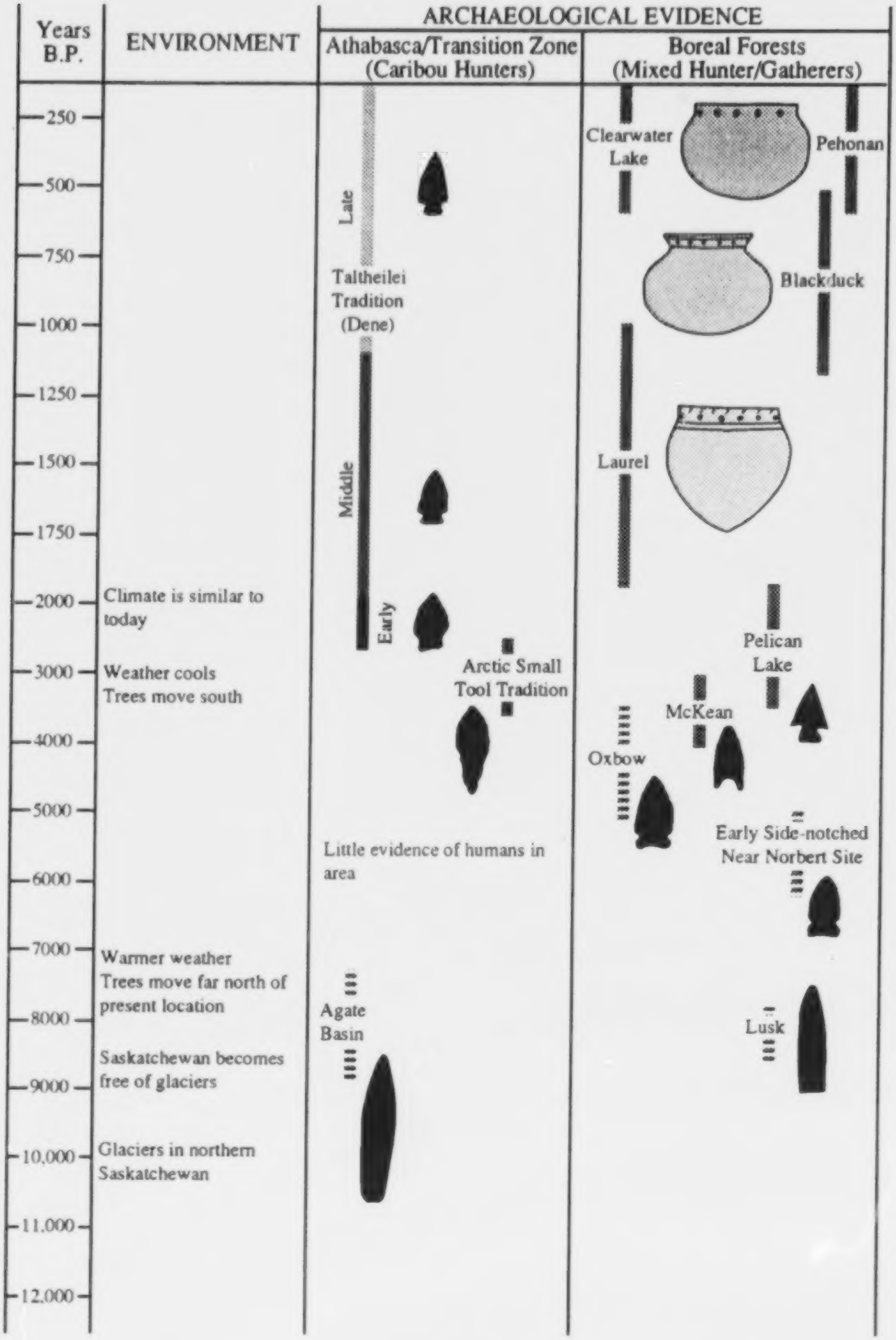
There has been a noticeable lack of precision in this discussion of First Nations peoples in the precontact period of Southern Saskatchewan. Movement of people and tribes has been common throughout human history on the plains. Correlating archaeological sites with particular First Nations groups is usually very difficult unless the sites are very recent.

THE PRECONTACT PERIOD IN NORTHERN SASKATCHEWAN

Northern archaeology in Saskatchewan is still a new area of study. The area is so far from major population centers that industrial development has been limited, and little rescue archaeology has been necessary. The archaeological sites that are there generally contain very little organic material because the acid in the forest soils decays bone and wood very quickly. There is also little flooding or deposits of sediment, so most sites lie near or on the surface—stratified sites are limited to some river valleys and sand dune areas. The precontact period in the North is still not very well known, so the information below (largely taken from D. Meyer in Epp and Dyck, 1984) will be adapted as more research is done.

At the time of European contact, there were two groups of people in Northern Saskatchewan. The first were the Déné who relied upon caribou, and followed the caribou onto the tundra of the Northwest Territory in the summer and into the Athabasca and transitional forests in the winter. The second group were the Cree who lived in the boreal forests, relying on a wide variety of resources (caribou, moose, elk, mule deer, beaver, muskrat, snowshoe hare, waterfowl, grouse, fish), mostly near northern lakes and rivers. This division of northern peoples seems also to apply to precontact times (Figure 8).

Figure 8: Timeline of the precontact period in northern Saskatchewan.



ATHABASCA/TRANSITION FORESTS

This is the area in Saskatchewan from the Churchill River northward. Although Saskatchewan was ice-free by 8500 B.P., the first people in the north arrived between 7000 and 8000 years ago. Their culture, called the Agate Basin complex, is known from a very few spear points found in the far north of the Province—an area which would have been within the winter range of the barren ground caribou. These points are similar to ones used earlier in southern Saskatchewan to hunt herds of bison, but it is not clear whether it was the people who moved north, or just their hunting technology.

As the climate warmed, the tree line moved far north of its present location, and barren ground caribou would rarely have entered the province. This is probably the reason that no evidence has been found of human occupation in Northern Saskatchewan during the cultural period (6000 to 3500 B.P.) which has been named the Shield Archaic where it occurs further north and east.

About 3500 B.P., the climate began to deteriorate, which resulted in the tree line moving south, the caribou wintering well within Saskatchewan, and early Inuit people moving south to hunt the caribou. The artifacts of this period, representing the Arctic Small Tool Tradition, are completely different from artifacts from southern Saskatchewan, and include finely crafted crescent-shaped blades, and projectile points which are pointed at both ends. Most of these sites have been found around Lake Athabasca.

By 2600 B.P., the area was inhabited by people who appear to be ancestors of the Athapaskan groups who reside in the area today. These people, represented in the archaeological record by artifacts of the Taltheilei Tradition, used projectile points with notches near the base. The archaeological evidence suggests that these people centered their lives upon the herds of barren ground caribou, hunting with notched projectile points that were often made of bone.

BOREAL FOREST

This is the area in Saskatchewan from the Churchill River south to the parklands. The people in this area were greatly influenced by the plains and parklands cultures to the south and the forest peoples to the southeast. No evidence of early precontact cultures have been found in the area.

The earliest materials that have been found in the area are along the Churchill River at the Near Norbert Site, which have been assigned to the Early Side-notched Tradition. These materials are probably close to 5000 years old and are very similar to projectile point styles on the plains. Since the parkland extended further north at this time, it is not surprising that some southern peoples travelled up the Churchill River system and discovered the riches further north.

Oxbow points like the ones common in the plains from 3500 to 5000 B.P. have been found along the Churchill and Clearwater Rivers and near La Loche. Exact dates for the northern Oxbow sites have not been obtained because of a lack of datable materials. Copper artifacts, traded from people in the Great Lakes region to the east, are found in sites from this period. Plains points (McKean and Pelican Lake styles) from succeeding periods are also found in the area.

The next major culture is called Laurel, and it is found in the eastern part of the area. It originated in an area to the southeast, in western Ontario, southeastern Manitoba, and northern Minnesota. In those areas, it dates from 2100 B.P. to 1000 B.P. This culture is identified by the presence of a collection of different artifact types: conoidal ceramic pots that were made using the coiling technique and decorated with tool impressions, stemmed and notched projectile points, and harpoons. In the areas of Boreal forest not occupied by Laurel peoples, a northern expression of the Besant culture is present.

Blackduck is the next cultural tradition found occasionally in the eastern boreal forest of Saskatchewan which has its origins further southeast. The main characteristic of this tradition is another unique style of pottery, with globular pots (round with rounded bottom) with a heavily decorated small neck and flaring rim. This culture dates from about 1150 - 550 B.P., and is also associated with small points and tubular smoking pipes.

The Clearwater Lake culture is found across boreal forest area dating from about 600 B.P. Again it is recognized by a unique pottery style similar in shape to Blackduck but with different rim shapes and decorations. Other artifacts are also similar to Blackduck, but the assemblage also includes ground stone adzes (blades with the cutting edge at right angles to the handle, used in wood work such as canoe manufacturing). The rock paintings drawn on outcrops along the Churchill River are thought to date from this period. This culture is thought to be directly ancestral to the modern Cree.

Dating from the same time, the Pehonan culture is one which combines characteristics of the Clearwater Lake and southern Plains Side-notched cultures. Although the Pehonan pottery is similar to Clearwater Lake, it is often slightly different in shape and has decorations more like Plains pottery; the arrow heads at Pehonan sites are also like the Plains Side-notched ones. Bushfield West, near Nipawin, is a characteristic Pehonan site which dates to about 350 B.P. Pehonan may be the archaeological representation of Cree who wintered in the parklands and came in contact with southern tribes.

HISTORIC PERIOD
(260 B.P OR 1691 A.D. TO PRESENT)

Traditionally, the boundary between prehistory and history has been marked by the arrival of the first Europeans who kept written records of their activities in Saskatchewan. In this handbook, precontact has been used to refer to the period and peoples before the arrival of Europeans. Because this contact occurred at different times in different parts of the province, and because the early records are not continuous, it is difficult to place a firm date on the beginning of the Historic Period. The first description is by Henry Kelsey, who visited the Touchwood Hills in 1691. More continuous records do not begin until 1754 when the Hudson's Bay Company began to send employees inland from York Factory winter with the Cree. In 1774, the first continuously occupied fur trade site was established at Cumberland Lake (although temporary posts were built as early as 1751). Away from the major fur trade and explorer routes, some areas do not appear in historic records until the early 1900s, by which time European settlers and missionaries were present in most parts of the province.

In the archaeological record, the historic period is marked by the appearance of large quantities of European goods at archaeological sites. Some historic archaeological sites were inhabited by Europeans (such as fur trade posts and early homesteads) while other sites were inhabited by descendants of the precontact peoples, who were interacting with Europeans. Some European trade goods filtered into the province with the establishment of fur trade posts on the western part of Hudson's Bay in 1682 (not always through direct trade with Europeans but more often through trade among the First Nations groups); trade goods became more frequent as fur trade posts became established in Saskatchewan.

Historical archaeology fills in the story of Saskatchewan's past by revealing information about everyday events and people that are often left out of written histories. It differs from precontact archaeology in the availability of written records as another source of information. The fur trade, Northwest Mounted Police, early Métis lifestyles and the resistance of 1885, early homesteading, and even the industrialization of the 20th century are illuminated in a new light when archaeological sites from these periods are investigated.

FURTHER READING

More detailed information about the precontact and early historic periods in Saskatchewan can be obtained by reading the following material. These resources are described in more detail in Chapter 8.

Bryan, Liz

1991 The Buffalo People. The University of Alberta Press, Edmonton.

Epp, Henry T. and Ian Dyck

1983 Tracking Ancient Hunters; Prehistoric Archaeology in Saskatchewan. Regina: Saskatchewan Archaeological Society.

Helgason, Gail

1987 The First Albertans. Edmonton: Lone Pine Publishing.

Linnamae, Urve and Tim E. H. Jones (eds.)

1988 Out of the Past. Saskatoon: Saskatoon Archaeological Society.

McGhee, Robert

1989 Ancient Canada. Canadian Museum of Civilization, Ottawa.

Saskatchewan Archaeological Society

"Studying Saskatchewan's Ancient Human History." A slide show.

CHAPTER 4:

CAREERS IN ARCHAEOLOGY

ASPECTS OF THE JOB

Archaeology involves two general types of work. For two to four months of every year, most archaeologists participate in fieldwork. Because sites are usually situated in distant areas, fieldwork often temporarily takes archaeologists away from their families and friends. Fieldwork demands that a person enjoy physical outdoor activity. Not only is the nature of archaeological fieldwork physical, but the sites are often very remote, and may require the archaeologist to walk or canoe long distances and camp in primitive conditions. Working and living in close quarters with a crew also demands that an archaeologist be easy-going and considerate of others.

Archaeologists spend most of the winter months in the laboratory or office. Our climate makes outdoor work difficult in the winter, and the analysis of archaeological artifacts and site information usually takes much longer that does the gathering of the data in the field. Even the preparation for yearly fieldwork—library and archival research and making logistical arrangements such as seasonal staff hiring and facility rentals—takes a lot of work. In both winter and summer, an archaeologist must also have a great deal of patience in order to conscientiously complete the often repetitive tasks involved in finding and analyzing artifacts.

ARCHAEOLOGICAL SPECIALIZATIONS

No archaeologist is capable of being an expert in all aspects of the field. The smaller the area of specialization, the easier it is to gain a comprehensive knowledge of the subject and keep abreast of developments in the field by other archaeologists.

Most archaeologists specialize in a certain area of the world, or a certain time period. All classical archaeologists, for example, study the civilizations in the Old World. However, each would specialize further and study a more limited subject such as Pre-dynastic Egypt.

Some archaeologists specialize in the analysis of one particular category of artifact, although they must have a familiarity with a wide range of artifacts. Zooarchaeologists, for example, specialize in the analysis of animal remains at archaeological sites, and can determine not only the species of animals, but often their sex, age, and physical condition. Lithic analysts study stone artifacts, determining what kind of rock was used, where it came from, how the tool was made, and what it was used for.

Some archaeologists are more involved with writing reports, and rarely get a chance to examine the artifacts. They must pull together all of the information about the site, its artifacts, and their distributions within the site. Then they must interpret what human behavior was involved in creating the patterns seen in the archaeological record.

In attempting to interpret the human behavior represented in the archaeological record, some archaeologists rely on experiments which attempt to reproduce the patterns observed in archaeological artifacts or sites. This specialty is called experimental archaeology.

Archival research demands a familiarity with libraries and archives, and their wide range of literature sources and historic documents. It is necessary to provide archaeological projects with historical background.

Paleoenvironmental studies are now an integral part of most large archaeological projects. However, the specialized knowledge necessary to identify and interpret clues such as pollen grains is far beyond the capability of most archaeologists.

Computer applications are also becoming essential for cataloguing archaeological data, and helping to recognize patterns in that data. Some archaeologists specialize in creating computer applications which are personalized for the special needs of each project.

Public education is a growing specialization of archaeology in Saskatchewan. If archaeologists only talk to each other, their research is of very limited value. Opening sites up to visitors, working in museum settings, and writing for a general audience allow archaeologists to spread the news of their discoveries.

The manager of each archaeological project must assemble teams of these specialists to work together. Each person's knowledge contributes to greater understanding of the archaeological record.

EDUCATIONAL REQUIREMENTS

Although the choice of specialization has much to do with the course of training required, and the employment opportunities that will result, all archaeologists must first obtain a bachelor's degree from a university. Therefore, a matriculation program in high school, with a strong background in a variety of social sciences and sciences, is essential. Archaeology is usually considered a subdiscipline of Anthropology in Canadian universities, but occasionally is a separate discipline. Prospective archaeologists should therefore enrol in a four-year program in Anthropology or Archaeology. Specific courses depend upon the interests of the students.

Although technical jobs in archaeology (excavation or cataloguing and analyzing artifacts, for example) usually require a minimum of a B.A. degree, competition for jobs is often stiff. In addition, in most Provinces, only people who hold at least a Master of Arts or Science degree in Anthropology or Archaeology can obtain permits to carry out independent excavations. Therefore, any student considering a full time career in archaeology is advised to obtain a M.A., which takes an additional 2 to 4 years to complete.

Archaeologists wishing to find long-term employment in Universities, government departments, or museums should continue in their education to obtain a PhD in Anthropology. In order to receive this degree, a student must prove that he/she has the ability to make important and unique contributions to the field of archaeology. A PhD usually takes 4 to 7 years to complete.

Students interested in Classical Archaeology must follow a different educational course, usually through Departments of Classics in universities. Their job opportunities are usually in university and museum settings.

JOB OPPORTUNITIES

Archaeologists usually gain employment in the following arenas: consultant companies and research groups (for example, Western Heritage Services), universities, Provincial and Federal Government departments (for example, Saskatchewan Heritage Branch, Canadian Parks Service), and museums (for example, Museum of Natural History in Regina, Canadian Museum of Civilization).

Unfortunately, the job opportunities for archaeologists are fairly limited. Many of the jobs are with consultant groups that specialize in doing research associated with proposed land developments. Because of the nature of the research, the number of positions available fluctuates with the general economic climate. These jobs are often short term, because the projects are generally small in scale and unpredictable in availability. Competition for more permanent jobs is often fierce, but for those dedicated to the subject, jobs can usually be obtained.

Outside of the university setting, archaeological research depends mainly upon public support. This funding can be through government grants, or through legislation that requires private companies to pay for studying sites that are endangered by proposed developments. Active lobbying by members of the public is largely responsible for the heritage legislation that currently protects archaeological resources in the province. It is only through continued public support that the quality and quantity of archaeological research in Saskatchewan can be maintained and perhaps grow.

FURTHER READING

More detailed information about archaeology as a career can be obtained by reading the following material. These resources are described in more detail in Chapter 8.

Archaeological Survey of Alberta
1989 "Archaeology as a Career." An unpublished fact sheet.

Cable Regina and the Saskatchewan Archaeological Society
1987 "Discovering Saskatchewan's Past."
The first two episodes of this video series in particular deal with archaeology as a science and a profession.

CHAPTER 5:

AN ARCHAEOLOGICAL CASE STUDY

AN INTRODUCTION TO BUSHFIELD WEST

Bushfield West is one of the most interesting precontact sites ever studied in Saskatchewan. Archaeologists from the Museum of Natural History discovered the site in the early 1960s on a floodplain of the Saskatchewan River, near the town of Nipawin. While studying the Francois Finlay fur trade post, they noticed a scatter of bone and stone tools on the surface of the neighbouring ploughed field.

ASSESSMENT OF THE SITE

In 1976, the site was revisited by a group of archaeologists from the Saskatchewan Research Council (SRC). They were in the area to find and study the archaeological sites that would be affected by a hydroelectric development sponsored by the Saskatchewan Power Corporation (SaskPower). The archaeologists collected artifacts lying on the surface of the field, carefully mapping the location of each item. They also used shovels to dig a series of square test pits. These tests gave them an idea of how deep the site was buried, and if any parts of the site remained undisturbed below the plough zone. This assessment of Bushfield West indicated that much of the site was undisturbed and had great potential for revealing the cultural history of the area. The archaeologists therefore recommended that more research be done at the site.

By 1982, it was known that the building of Francois Finlay hydroelectric dam would result in the flooding of Bushfield West. Archaeologists from the SRC were hired by SaskPower to revisit the site. They planned to thoroughly test the site and excavate large blocks in order to retrieve as much information as possible.

The SRC archaeologists divided the site with a grid. Along each grid line, they excavated 50 x 50 cm test pits spaced 12 m apart. These tests were supposed to indicate the size of the site and patterns in the arrangement of artifacts. The test pits were excavated in levels which corresponded to the natural stratigraphic layers in the soil.

The stratigraphy at Bushfield West was uncomplicated . The plough zone (Level 1) was 8 to 15 cm thick. Below that was a thin level of grey sand (Level 2) that was deposited when the river flooded. Below the sand was a black layer 3 to 6 cm in thickness that was identified as a paleosol (Level 3). As is the case at Bushfield West, these dark coloured soil layers often contain evidence of human activity.

Test pits were dug well below the paleosol, to make sure that no deeper levels containing artifacts were present. Artifacts were collected in bags that were labelled with the test pit coordinates and the stratigraphic level in which the artifacts were found.

The assessment confirmed that most of the artifacts at Bushfield West rested on the surface of the easily recognized paleosol, except in areas where the paleosol had been mixed with the upper soil layers through ploughing. The site covered an area of 1.5 hectares, with the evidence of human activity concentrated in certain places.

EXCAVATION OF THE SITE

The methods used in excavating Bushfield West took advantage of the knowledge gained in the assessment. Because the artifacts were limited to a thin layer, the original ground surface upon which people lived—the living floor—could be uncovered in large blocks to study how artifacts were distributed across the site. Areas were chosen for excavation because they had contained interesting artifacts or features in the assessment. In order to compare differences in activities from one part of the site to another, the archaeologists excavated in large blocks of neighbouring 1 x 1 m units that were aligned with the site grid.

At Bushfield West, the excavation methods were chosen to recover as much useful information as possible. The top levels of soil could be shaved off with shovels and discarded because the assessment indicated that they were essentially sterile. As the excavation neared the level of the paleosol, shovels were exchanged for trowels for more careful digging. After using paint brushes to remove the last soil from around the artifacts on the living floor, each 1 x 1 m unit was sketched and photographed. Then the paleosol level, including the artifacts, was excavated. All of the contents of each 50 x 50 cm block of living floor was collected in a bag. This process is different from the standard practice of collecting only the artifacts and sifting the dirt before discarding it. Each bag was labelled with the appropriate coordinate numbers indicating the location of the unit.

In the laboratory, archaeologists sifted each bag through window screen (2 mm mesh). Those items that were too large to pass through the screen were sorted, removing the non-artifacts and dividing the artifacts into different categories for analysis. The result of using these excavation methods is that archaeologists were able to discover and analyze thousands of tiny artifacts and seeds that would normally have been overlooked in excavations, and which would have fallen through screens with larger mesh.

RESULTS AND INTERPRETATIONS

The information gathered from Bushfield West is impressive. By the end of the 1984 field season, a total of 624 m^2 had been excavated. Through excavations and tests at the site, archaeologists collected approximately 250,000 artifacts. Terry Gibson, an archaeologist now with Western Heritage Services, Saskatoon, had the responsibility of making sense of all of this information.

With so many artifacts found, it was necessary to use a computer cataloguing system to organize the information. The system is a database, with each record representing a single artifact or a group of similar artifacts found within the same level and unit. Within each record is a series of fields which contain information about precisely where the artifact was found, and a complete description of the artifact—its weight, size, the material from which it was made, and what it is thought to be. Below are some examples of what was found at Bushfield West and how it was interpreted. These illustrate the kinds of questions that can be answered using archaeological information.

Artifacts were often clustered around hearths. Remarkably, many of these hearths and associated artifact clusters were completely surrounded by sterile soil. This lack of loosely scattered artifacts suggests that the site was flooded soon after the occupation, capping the remains and protecting them from disturbance.

An example of this kind of clustering, and Terry Gibson's interpretation of the activities represented, is illustrated in Figure 9. The clusters of artifacts around a hearth suggest activities that were associated with a round dwelling, although no remains of the actual structure were found. On the east and southeast sides of the hearth, large numbers of stone flakes and cores from which those flakes were removed indicate that stone tool manufacturing was the most important activity around the hearth. The analysis of bone, burnt bone and pottery pieces indicate that bison was probably cooked in a pot, and young beaver was roasted over the fire.

Spills of ochre (iron oxide) and grinding tools for making the ochre into paint found near the hearth, indicate that paint was made there and perhaps used in ceremonial activities. Two small trash dumps were at the edge of the dwelling, with pottery sherds discarded in the southwest corner, and bone, flakes, and broken tools thrown in the northwest. Because the area to the west of the fire was clear of artifacts and its living floor surface was unusually compacted, it appears that the area had been kept clean for sitting or sleeping, which after an extended time had compressed the soil.

The archaeological evidence has also revealed some general information about the site. Pollen recovered from the paleosol has been analyzed and indicates that the floodplain upon which Bushfield West sits was covered with birch trees at the time of occupation. Radiocarbon dates of bone and charcoal indicate that the site was about

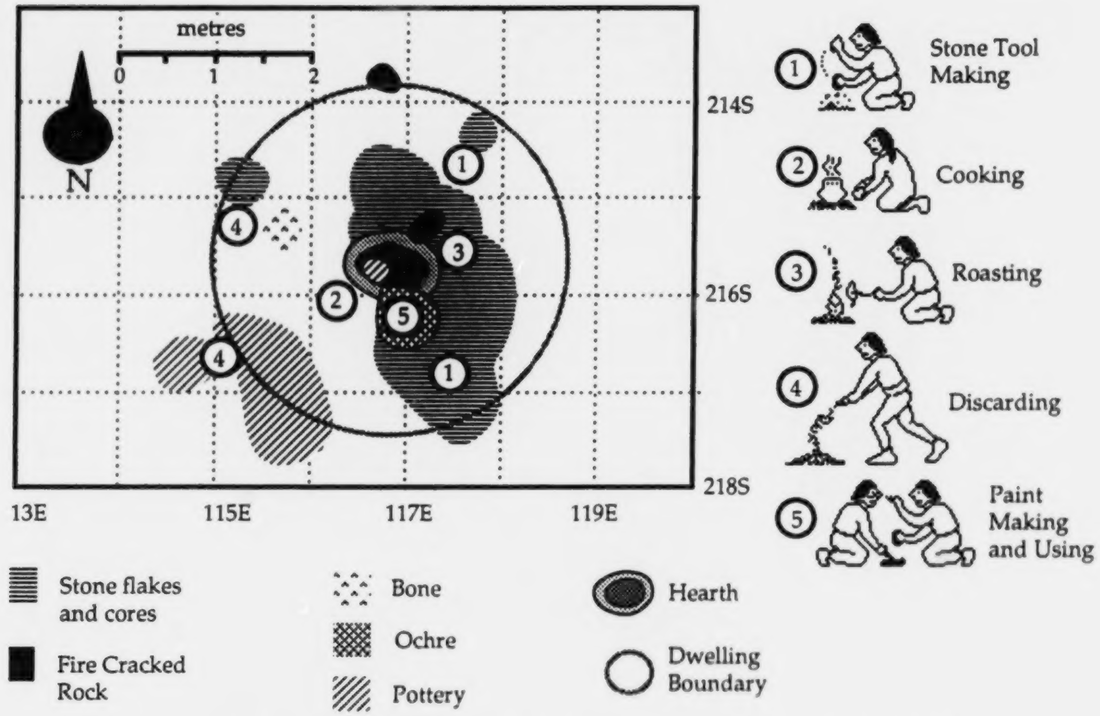

metres
0
1
2
N
214S
216S
218S
13E
115E
117E
119E
1
2
3
4
5
① Stone Tool Making
② Cooking
③ Roasting
④ Discarding
⑤ Paint Making and Using
Stone flakes and cores
Fire Cracked Rock
Bone
Ochre
Pottery
Hearth
Dwelling Boundary

Figure 9: The clustering of different kinds of artifacts around a hearth in Block 3 at Bushfield West.

400 years old. The pottery from the site is of a style associated with the Pehonan culture. The thickness of the artifact layer suggests that the site was revisited for a number of years. Because analysis revealed the presence of foetal bison and immature beaver bones, and the presence of egg shell, it seems likely that the site was visited in the spring. The presence of exotic marine shell, rare native metals, and uncommon rock types suggests that the occupants of Bushfield West were involved in precontact trade over long distances. The activities represented in artifact clusters indicate that the site was a multipurpose campsite, in which a variety of cooking, butchering, tool making, and ceremonial activities took place.

CONCLUSION

Bushfield West now lies under approximately 30 metres of water in the Nipiwan Reservoir. But thanks to the careful work of archaeologists, much of the valuable information that the site contained has been preserved. The site report is now being completed. The artifacts and the computer database will provide future archaeologists with the information needed to answer almost any conceivable question.

CHAPTER 6:
ARCHAEOLOGY AND CURRICULUM

REQUIRED AREAS OF STUDY

This section will explore how archaeological ideas can be introduced for a number of required areas of study. This is not meant to be a progressive curriculum, with each year based upon the previous years' teachings. Rather, it is meant to provide a wide range of ideas for fitting archaeology into the curriculum, because of the interests of the teachers, the interests of the students, or to take greater advantage of opportunities for class involvement in archaeological research.

By suggesting ways in which archaeological themes can be introduced through the existing Sask. Ed. curriculum, this section will explore how archaeology can tie together various required areas of study into one integrated unit (see Devine 1989). It also provides suggestions for integrating the subject matter of archaeological field trips into regular curriculum, ensuring that maximum benefit is achieved through the out-of-school experience, should the opportunity arise. The curriculum for Saskatchewan schools is undergoing a major revision, so some of the specific suggestions for integrating archaeology may be out of date within a few years. However, the suggestions will indicate the wide applicability of archaeology. The concepts and activities that are introduced in this section are independent, and do not require that archaeology has been the subject of previous years' or previous classes' study.

Social Studies

In social studies, archaeology should be introduced as an important method of gathering information about the past, information about everyday events and people that were often left out of written histories. That is why historic as well as precontact sites are studied by archaeologists. During any class discussions of past historical events and different cultures, archaeological reflection can be practiced as a means of practicing critical and creative thinking:

> What kinds of materials would be left behind after such an event?
> Which of these would survive after several hundred years of abandonment?
> What would be unique about the materials that would give archaeologists clues about the time that the event occurred, and what people were involved (male or female, culture or nationality, status of participants within their culture)?

What aspects of this culture would distinguish it from all others in the archaeological record?

What information could you retrieve from the archaeological record about this [kinship system, religion, language, economic system, political system, modes of transportation, food production, or world view]?

Science

Archaeological ideas can be introduced in science classes at all levels from grades 1-12. It provides suitable material for covering most of the Dimensions of Scientific Literacy which form the backbone of the new curriculum. Ecological concepts, geography and geology, are all integral to archaeological research. But probably its biggest contribution to pre-university students is the ease with which it can be used to get students involved in the procedures of scientific investigation (observation, measurement, classification, experimentation, communication, formulating hypotheses, formulating theories and models and making predictions using analogies). It can introduce them to the "scientific point of view" which guides this investigation (including the belief that the world is ordered and can be understood, that there are many methods for investigation, and that attitudes such as open-mindedness and accuracy are important). See the 1976 Saskatchewan Education Curriculum Guide for Chemistry 20 and 30 (pages 58 - 80) for further discussion of scientific investigation, and the importance of getting students to understand its nature.

Language Arts

Recording information is integral to collecting archaeological materials. Journal entries are made daily in the field, recording the weather, who was present, what was done, what was found, and some preliminary interpretations. Students visiting archaeological sites or taking part in archaeologically oriented activities could write such a journal entry. An important aspect of archaeology is formally reporting what has been found and how it has been interpreted. This can be done through written reports, aural presentations (perhaps accompanied by slides or displays), poster displays or exhibits, or even video. Creativity can be brought out in fictional accounts of archaeologists uncovering the mysteries of the past, or elaborate reconstructions of past cultures based on archaeological information but using imagination to fill in the gaps. All of these types of activities allow students the opportunity to use archaeological terminology in context, and develop their communication skills.

Mathematics

Archaeology can provide subject matter for exercises to develop plotting skills, numerical calculations such as percentage and averaging problems, geometric concepts, and measuring skills.

Arts Education

Reproducing artifacts and archaeological sites allows students to be creative. The most valuable activities for giving students a sense of life in the past are those which attempt to reproduce artifacts as authentically as possible, using the materials and techniques that would have been available to the Prehistoric people. Reproductions described in Activity 5 of Chapter 7 can be adapted for any grade.

Archaeological interpretations could also be presented in visual form, as illustrations or even as dramatic recreations of the events that may have taken place at a site. These forms of expressions can bring life to interpretations that can seem static if presented only in tables of data and factual reports.

Native Studies

Archaeology can be used as a means of studying the long prehistory of native people in Saskatchewan and the rest of the Americas. Much of what is known about the day to day lifestyle of Indians at the time of European contact and before is known through archaeological evidence.

GRADE LEVEL

Grade 1

Science

Classification is introduced at this level. If artifact collections are available, use these as an interesting alternative to buttons or pieces of paper. They can be sorted according to many properties: size, colour, what they are made of, etc. More complex classification activities, such as dividing groups into subgroups, can be used with older students (see Activity 7).

The effect of environment on plants is introduced. Allow the students to consider what would happen to the plants in our environment if the weather suddenly became colder or dryer, as it has in the past. If plants change or die, what happens to the animals (including humans) who rely on those plants?

Grade 2

Science

Classification activities become more complex (involving subgroups and the introduction of the idea that grouping is arbitrary), so an archaeological classification exercise, such as Activity 7, could be used.

Students learn that living things adapt to their environment and to seasonal changes in their environment. How does this fact make it possible for archaeologists to sometimes know what season people visited an archaeological site? (see seasonality in glossary).

Since dinosaurs are popular at this age, it would be appropriate to explain the difference between archaeology and paleontology.

Grade 3

Math

Archaeological examples can be used to practice measurement such as length, and mass of artifacts.

Science

Environmental changes in the past have had effects upon the development of living things, including humans. What was the environment like in Saskatchewan 25,000 years ago, and how did that affect the ability of humans to live here?

The study of precontact peoples is useful in getting students to understand ecological concepts: that humans are part of the food web. Have them imagine life in the past, and all of the things in the environment that they would have to rely upon to survive. Do all of these parts of the web leave evidence in the archaeological record?

Humans change their environment. Consider the changes that humans are responsible for now with the changes 100 years ago, and 1000 years ago. 100 years ago people built houses and forts, they cleared land and farmed, they build towns and cities. 1000 years ago people hunted animals and gathered wild foods, they cut trees for their tents, and they burnt areas to attract animals with the fresh young plants that would grow back. It is because humans change their environment in unique ways that archaeologists recognize human activity at sites even when there are no human bones to prove that people were there.

Grade 4

Social Studies

The 1973 curriculum guide puts the emphasis of grade 4 social studies upon Saskatchewan, and the emphasis is will remain the same in the upcoming update. Saskatchewan archaeology should be referred to in most sections of Units II (Who Are Our People?) and III (What Is Our Story?).

Some of the activities in Unit II make reference to Paleo-Indians, archaeological sites, and artifacts. The use of artifacts or pictures of artifacts can be used to construct time lines of Saskatchewan history. However, it is important to stress that the original context of those artifacts (in archaeological sites) is what really reveals the information about age and function of the artifact, and the lifestyles of the people who used them. Some aspects of the First Nations religions can be studied through sites such as vision quests, medicine wheels, and rock art sites. Cultural change as a result of contact between Europeans and Aboriginal Peoples in the historic period can be used to understand some of the cultural change in the precontact period. Likewise, the reasons for population changes today (changing economics, gradual climate shifts, technological developments) can illuminate the past archaeological record and show that population changes are ongoing and are not always due to catastrophes.

In Unit III, archaeology has made important contributions to our understanding of the "Indian Way of Life". Early explorers and later anthropologists recorded some of the more spectacular aspects of Aboriginal Peoples lifestyles. First Nations elders and scholars have knowledge about many of the most common and many of the most important activities of the precontact and historic periods. However, many of the day to day practices of precontact peoples can only be studied in detail through archaeological excavations. Similarly, many historic periods and events in Saskatchewan (for example, the fur trade era, the Resistance of 1885, the settlement period) can be more fully understood only after archaeological investigations—not just to retrieve artifacts for museum displays, but to flesh out the events, by understanding what the artifacts in context can tell us about the people involved and how they lived from day to day.

Math

Because students are beginning to construct line graphs in grade 4, plotting the location of artifacts within an excavation unit using coordinates would be a good activity. Students can calculate the areas of sites or excavations (if they are rectangular) using formulas.

Science

Grade 4 science students study the cycle of matter and energy between living and non-living objects in the environment. Living things die, decay, and become food for other living things. Most organic substances—things that were once alive or part of a living thing—do not survive in the archaeological record. Students can discuss the reasons behind this.

Grade 5

Social Studies

The 1973 Saskatchewan Education Curriculum Guide puts the emphasis of grade 5 social studies upon Canada, and the emphasis is expected to remain the same in the upcoming revision. Canadian archaeology could be referred to in most sections of Units II (Who Are the People of Canada?) and III (What Is Canada's Story?). Although these emphasis are likely to change very soon, they will be discussed here in order to provide general ideas for future archaeological topics.

The initial part of Unit II discusses the precontact inhabitants of Canada, their lifestyle and their technology. The contribution of archaeology to our knowledge about those people should be discussed. Knowledge of peoples whose descendants did not survive long into the historic period comes almost entirely through archaeology (see, for example, P. Such in "Further Reading" of Chapter 8). If artifacts are studied in this unit, they should again be placed within the context of archaeological sites and the lifestyles of the people who used them. First Nations resource people are valuable for demonstrations because they not only have the technical skills but can also offer first-hand interpretations of the Indian way of life today; however, archaeologists can also make interesting alternative resource people for craft demonstrations and artifact reconstructions. Many archaeologists have studied techniques for stone tool making, pottery making, and other crafts and skills that were necessary for survival in precontact times.

In Unit III, Canada's story is also being fleshed out by historical archaeology. Early historic records were written by people who were seldom objective observers: they were often writing to serve their own ends and to make superiors happy. Excavation at historic sites fleshes out these observations, and often illuminates their inaccuracies; this is well illustrated in the historical chapter in *The First Albertans* (see "Books and Periodicals", Chapter 8). Archaeological sites have been studied from all periods of Canadian History, from the Norse settlement in Newfoundland (see Vinland Mystery in "Videotapes and Films" of Chapter 8), to the search for the Northwest Passage (see Beatty and Geiger in "Books and Periodicals", Chapter 8), numerous fur trade posts (Fort Pitt and Fort Carlton), Northwest Mounted Police posts (Fort Walsh), clashes between cultures (Batoche), gold rush sites (Chilcoot Trail in the Yukon), early settlement period homesteads, and industrial sites such as coal mines (Leitch Colleries in the Crowsnest Pass of Alberta). There are also opportunities for practicing interviewing skills in the oral history activity described near the end of Unit II, an invaluable skill for archaeological research of recent historical sites.

Math

The grade 5 math curriculum introduces mean values, for which archaeological examples such as artifact numbers per unit or artifact measurements are useful. Simple percentage problems can be introduced (denominators of 2, 5, 10, or 100) using archaeological examples. The skill of copying pictures from one grid to a second grid of a different size can be practiced by sketching onto a small grid the distribution of artifacts on the floor of an excavation unit (the excavation unit can be divided up lightly traced lines or string).

Science

The study of time in grade 5 science stresses that recorded history is but a small portion of time. To stress this, precontact dates of archaeological interest can be labelled on the time line (especially on the 10,000 year time line).

The study of erosion and deposition are important to understanding how archaeological sites are formed after the original inhabitants have abandoned the location. Different forces work to bury the site (for example, flooding), move the artifacts around in the ground (plant roots), and weather the artifacts (running water). These can be demonstrated in the classroom (see Activity 1) or can be observed in field situations.

The effect of heating and cooling on rock can be demonstrated with what archaeologists call fire cracked rock (fcr). It is formed by heating rocks and immersing them in water. Water was often boiled this way in precontact times, creating lots of fcr in most archaeological sites.

An Indian fire drill can be used for studying friction. Try making one out of natural materials and use punk of moss to see if you can actually get a fire going: willow for the bow, leather for the string, and soft dry grass or birch bark for tinder.

Grade 6

Social Studies

The new grade 6 social studies curriculum focuses upon the Atlantic. Unit I deals with location. Archaeological examples would be useful in talking about atlases, maps, and grids, as these are all essential in recording where sites and artifacts are found, and what the environment is like in those locations. Archaeology fits directly into Unit II, where it is stressed as one of the ways of learning about prehistorical (pre-contact) periods.

The entire theme of Unit II—interactions among different groups of people and their environment both before and after contact—is central to archaeology in the New World. Historical archaeology should be included in this unit as a means of learning about common people and minorities who are usually left out of historical documents. It has only been recently that many of these groups have been writing their own story, thus entering into our historical records. The archaeological record has always been less biased than the historical record. The archaeological record (the artifacts in the ground) is the voice of people who left the artifacts behind, whether they were rich or poor, whether or not they could read or write. Archaeologists interpret the people's story from those sites and artifacts. Archaeological interpretations, like historical documents, can also have biases, since most archaeologists continue to come from a European academic tradition. However, increasing cooperation between archaeologists and descendants of the groups they are studying (whether First Nations groups, African Americans, or others) and increasing numbers of archaeologists from non-European traditions are helping to change this.

Math

In grade 6 math, archaeological excavations can be used to illustrate how areas of irregular shapes can be determined. By counting the individual 1 x 1 m units, one can calculate the total area of the excavation. More complex percentage problems can be broached (for example, percentage of artifacts with certain characteristics).

Archaeological excavations and materials also provide an opportunity to practice making and interpreting scale drawings, as the site and its individual features and artifacts are drawn.

Also at this stage, students gather data to construct simple bar and line graphs. Archaeology can provide many practical applications for such visual display of information, such as illustrating the relative numbers of different kinds of artifacts, or comparing the numbers of artifacts in different levels of an excavation.

Science

In grade 6 science, the chemical and physical processes involved in decomposition can be explained using the contents of an archaeological site as an example: physical processes such as root action, freeze-thaw, and water erosion combine with chemical processes to decompose organic materials, and weather many of the inorganics.

Ecology is described in the 1971 Sask. Ed. grade 6 Science Curriculum Guide as "made up of living and non-living components which are generally interdependent, and changes in any component affects the system" (p. 140). Discuss the differences between how modern humans, early settlers, and precontact humans changed their environment to suit their needs. How do these changes affect the plants and animals in the environment? (See also discussion of grade 5 science).

If animal skeletons are available, students can assemble the bones to look like the animal they came from. While doing this, they should carefully examine the bones, noting how each is slightly different. If more than one animal is available, compare bones from different animals but from the same parts of the body and note the similarities and differences: the differences relate to the special adaptations of each animal.

Archaeological methods of dating can be substituted for discussions of paleontological techniques for dating, and many of the processes are closely related. The suggested activity (page 148 the 1971 curriculum) of observing daily changes in milk that has been left out in the sun can be related to changes in styles of projectile points through time. Just as a single glass of milk can be dated by comparing it with the record of observations of similar glasses over a week, a single point can be dated by comparing it to the sequence of point styles that has been developed through excavations in Saskatchewan (see the time lines in Chapter 3).

Grade 7

Social Studies

The Sask. Ed. curriculum guide for Grade 7 highlights Canada's relationship to the world, particularly with the countries surrounding the Pacific Ocean. Unit I deals with the concept of "Location". In geographical terms, the physical environment profoundly affects human life, and in turn, humans affect their environment. Before archaeologists work in an area, they consult topographic maps to get an idea of landforms and water sources, they find out about the climate and vegetation of an area, and what animals would have been native to the area in the past. This advance research about the environment of their study area allows the archaeologist to hypothesize about if there will be archaeological sites in the area, the most likely places that they will be found, and the kinds of activities that will likely be represented at the site. Making and using maps during archaeological investigations of a site also provide useful practice in geographical concepts.

In Unit II, "Resources", students can compare lists of resources from the point of view of precontact peoples, early settlers, and contemporary Saskatchewan society. Do the differing distributions of these resources account for differences in population distribution in the various time periods?

"Change", stressed in Unit IV, has always been a major interest of archaeologists. They have documented the continual changes in human cultures through time, and have attempted to understand what factors bring about such change. It should be stressed that, although changes in recent times have been more dramatic, change has occurred throughout human history.

Unit V stresses "Interaction", another interest of Archaeology. Linkages have been important throughout the archaeological record. In Saskatchewan, there is evidence of long distance trading and social networks back thousands of years; there is evidence for trade of stone materials, and exotic items such as shell, but no doubt of other items as well (items that may have decayed, such as food items). The fur trade involved new people, new exotic goods, and new markets; however, the process, and the transfer of knowledge and information that occurred at the same time, remained essentially the same. Natural barriers such as the Rocky Mountains, and natural linkages such as water systems, were historically very important. We can trace changes in the importance of these linkages and barriers by finding the sources of exotic raw materials, tracing the sites where the materials are found, and relating these networks to the natural linkages and barriers in the environment.

Math

Because grade 7 students begin to measure and construct angles from 0° to 180° using a protractor, they would benefit greatly from the practical application of angles in mapping sites as described in the Activities 3 and 4 of Chapter 7.

Science

Archaeology fits best into the fourth theme of grade 7 science (Man and the Environment). Discuss the differences between how modern humans and precontact humans changed their environment to suit their needs. How do the changes affect the plants and animals in the environment? Discuss the different adaptations of people, past and present, to the various biomes of Saskatchewan (prairie, coniferous forest, etc.); how have people changed the biomes.

Grade 8

Social Studies

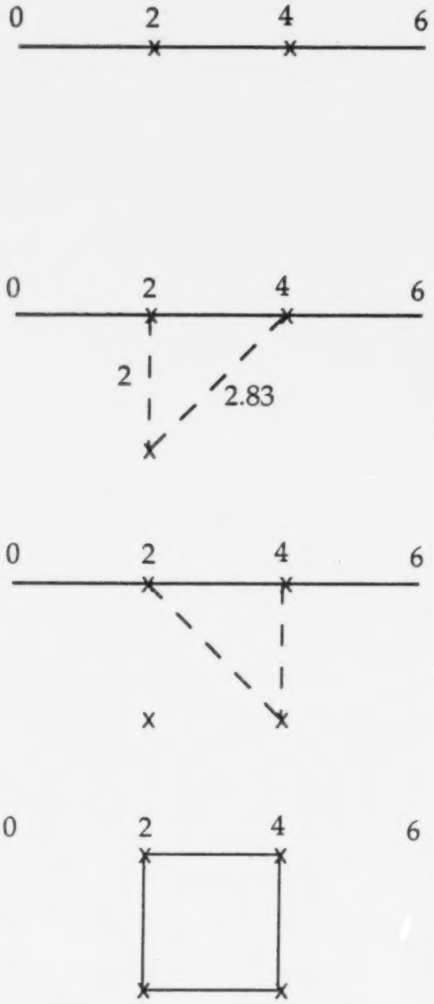
Culture is stressed in Unit I of the grade 8 social studies curriculum. Archaeology studies past cultures, their patterns, changes and why they occur. Although their data base is limited by what people leave behind and what survives the forces of nature through time, archaeology attempts to study all aspects of culture and cultural change.

In Unit IV, Interdependence, students can consider the effects of changing technology on changing interdependence from early precontact times, through fur trade times, through early settlement period to today. Make sure they are aware that even in precontact times, people were interdependent: cooperation was essential to survive (cooperative bison hunting, for example).

Math

In grade 8 math, the Pythagorean Theorem is used to determine the length of the hypotenuse given the other two sides. This is a common calculation used by archaeologists in measuring out perfectly square units along a grid line: they know the two points along the grid line, and using those as two corners of the square, they mark the other two corners at the intersection of the calculated hypotenuse and the length of one side of the square (see Figure 10).

Students also measure and construct angles from 0° to 360° using a protractor. At this level, students could map a site from any datum as long as the datum did not move (see Activities 3 and 4, Chapter 7).



1. The site grid line has 2 points marked which will become the corners of a square unit. The hypotenuse of a right angled triangle with two equal sides would be the square root of (2*2)+(2*2) or 2.83 m.

2. Two tape measures are held with their ends at each of the corners. The third corner is marked at the intersection of 2.83 m and 2 m on the tape measures.

3. The final corner of the square is placed at the intersection of 2.83 m and 2 m again, but what was the shorter tape measure in step 2 is now the longer one (the hypotenuse).

4. This process results in a perfect square, with all sides equal and all angles right. Why? Verify this by measuring the side opposite the grid line.

Figure 10: An explanation of how the Pythagorean Theorem is used by archaeologists to set out square excavation units.

Science

Archaeology is an excellent subject to introduce in grade 8 earth sciences. After deposition, archaeological sites become part of the environment, subject to the same forces of weathering and erosion as all other objects. Choose an actual or an imaginary archaeological site. Describe the surroundings (slopes, water sources, climate, vegetation). Identify the activities that took place. Consider the artifacts that would be left behind and where they would be deposited. Discuss the physical and chemical processes that would affect the site (decay, changes in artifacts and their placement due to erosion). Could an archaeologist excavating the site account for any of these changes (they can attempt to account for movement due to gravity, they can often distinguish natural weathering and erosion from purposeful breakage and shaping of artifacts).

Study of the soils at an archaeological site can provide clues of past climates and vegetation, because of the fact that different soils form under different conditions.

Humans have always depended upon water for survival. When surveying an area for archaeological sites, the land bordering rivers and lakes is investigated particularly closely because sites are far more likely to be discovered. Look at maps to see where settlements are located today in Saskatchewan. Although major roads and railways have an impact upon where towns are located, and which towns thrive through time, the presence of a dependable water source remains important.

Archaeological examples can be used when discussing radio-carbon and other dating methods.

In discussing glacial geology, relate it to human activity in the New World. Human habitation of Saskatchewan was not possible before the retreat of glaciers. Glacial lake terraces, the edges of glacial lakes that have since shrunk or dried up, are likely places to find very old archaeological sites, and can give clues to the approximate age of a site.

Contour maps are used in archaeology, both in determining where to look for sites, and in mapping a site to give an idea of relief. Profile maps are often drawn to illustrate characteristics of stratigraphy observed on the walls of a unit or to illustrate archaeological features in cross section. Profiles are often drawn by measuring the distance a point is removed horizontally and vertically from a reference point, and plotting that point on the profile drawing.

Grade 9

Social Studies

As its title suggests, "Roots of Society", the new Sask. Ed. curriculum for grade 9 social studies, is the most appropriate location in the school curriculum of K-12 for a Saskatchewan archaeology unit, including field trips or out of school activities. Although Unit I ("Time") stresses archaeological techniques and interpretations, the remainder of the curriculum also presents general archaeological themes of change, causality, culture, and technology. Field trips to archaeological sites, with or without ongoing excavations, would be useful in the fall for Unit I, or in the spring, with studies of the world view of First Peoples in Unit IV, and technology and adaptation to the environment in Unit V.

The Curriculum and Activity Guides and the bibliography for grade 9 social studies will be useful sources of information and ideas about archaeology and the way it can be presented in the classroom—not just to grade 9 classes but to other grade levels as well. This handbook should provide some useful supplementary information.

Math

Grade 9 math students would be able to map even a large site with multiple datum points because they understand: 1) how to draw angles, 2) the nature of supplementary angles, 3) corresponding angles and alternate angles, formed when parallel lines are cut by a transversal, are congruent. They are then able to draw a scale drawing (a map) of the site, understanding the nature of similar triangles (see Activity 3b).

Science

In stressing the characteristics of a world without energy beyond human muscle power, the grade 9 science teacher could use precontact or early historic Saskatchewan peoples as an example. Their lifestyle was very different from ours today. Could we go back to such a lifestyle? Are the natural resources still available to sustain such a lifestyle?

Grade 10

In high school, it becomes difficult to arrange out-of-school activities of any extended length. Trips to archaeological sites and excavations require more time than is available for single class periods. However, the complexities of archaeological research can more easily be accomplished by upper level students, making it desirable for detailed archaeological units to be taught. Secondary school teachers with an interest in teaching archaeology are urged to consider developing new curriculums for social science courses devoted to archaeology, and get them approved by Sask. Ed. as options. For example, a Grade 11 summer school course in archaeological theory and techniques is taught through the Toronto Board of Education, and includes practical experience in Board-run excavations and laboratories.

Social Science

One of the themes in grade 10 social science is exploration. The historical documents (journals, reports, etc.) concerning explorers and traders, the routes they took, the groups of people with whom they came into contact, and the nature of that contact, often do not tell the entire story of the events. The documents may leave out critical information that makes it difficult to trace the route of their exploration. The explorers describe their activities from their own point of view, often embellishing the truth to serve their own purposes. When the original documents have been lost or the explorer does not survive the trip, the journeys become even more mysterious. Archaeology has had a role to play in filling in the blanks left by historical studies of early exploration. For example, studies of archaeological sites related to the Franklin Expedition to find the Northwest Passage have shed new light on that disastrous voyage (see Beatty and Geiger 1988, in Chapter 8). Archaeological sites along the route of De Soto's exploration into the southeastern United States have revealed the brutality of those first encounters and the devastation that resulted to the First Peoples (see Milanich and Milbrath 1989, in Chapter 8).

Science

Soil chemistry is an option at the grade 10 level. Although it is usually considered in agricultural or forestry terms, the study of soil chemistry is also important to archaeology: specifically the effect of soils on archaeological materials.

Computing Science

Electronic Spreadsheets have become indispensable for archaeologists who must analyze large amounts of numerical information. Tables can easily be generated which not only list data, but performs calculations such as average values, sums, percentages, etc. Grade 10 students could use data from measurements or descriptions of artifacts, or from characteristics of sites (numbers of features, feature measurements).

Grade 11

Science

The benefits of teaching archaeology to illustrate the nature of scientific investigation were discussed earlier in this chapter in the "Area of Study" section.

Computing Science

Most archaeological cataloguing systems are computer data bases. Each record represents a single artifact or a group of artifacts which comes from the same level of one unit. The records are made up of fields which contain information about where the artifact was found, and descriptive information about the artifact (its size, weight, the material of which it is made, and what it is thought to be). The data base system used by many archaeologists in western Canada is called MacAdem™ (available through Western Heritage Services, see Chapter 9). It is based upon a series of multiple choice categories which the cataloguer fills in to describe each record as accurately as possible. Each record also contains a space for notes, in which the cataloguer can insert information which is not covered in the programmed categories. Grade 11 students can used an archaeological collection to devise a workable artifact database or catalogue.

Grade 12

Canadian History

One of the focuses of this course is upon the cultural forces involved in the early exploration and settlement of this country, and on the First Peoples who inhabited the country before and after this contact. The course explores how these forces shaped our national identity. Archaeology can help move history away from famous personalities to the effect of major events and trends on the lives of everyday people. It can do this by studying in detail the things left behind by those people, even though the individuals may not have written diaries or gained the high profile which ensures one's immortalization in history.

Science

The benefits of teaching archaeology to illustrate the nature of scientific investigation were discussed earlier in this chapter in the "Area of Study" section.

ARCHAEOLOGY AND THE COMMON ESSENTIAL LEARNINGS

Archaeology offers the subject matter and the activity opportunities to effectively incorporate all of the Common Essential Learnings (C.E.L.s) into the education of pre-university students. The activities in the next chapter incorporate all of the C.E.L.s into their programs. For clarification, an icon representing the C.E.L. will appear in the margin of the text beside the stage in the activity which exercises that C.E.L. in particular (understanding that the C.E.L.s overlap in different learning situations).

Communication

A B C

Archaeology as a discipline requires participants to be able to study literature, take notes about their research, and report their findings in written and verbal form. Activities based upon the subject of archaeology (such as those in the next chapter) stress class and small group discussions, note-taking, and the composition of reports. The language of archaeology (special terms and meanings such as those listed in the glossary in Chapter 10) provides an interesting means of expanding student vocabulary.

Numeracy

1 2 3

Archaeological activities provide practical situations for using mathematical concepts. Those activities give students an opportunity to practice doing problem-oriented calculations and measurements accurately and in the appropriate situations. Some archaeological problems demand that students be able to organize their numerical information in the form of tables and graphs. They must also be able to interpret that numerical information and use it to solve research problems, and perhaps predict the outcomes of further experiments or observations.

Critical and Creative Thinking

The introduction of a topic such as archaeology, that tends to be relatively unknown to students and yet holds the natural allure of the old and mysterious, is a valuable means of exercising critical and creative thinking skills. Archaeology is problem oriented and provides students the opportunities to generate appropriate questions, consider methods of answering those questions and evaluating the methods they chose. The tentative nature of archaeological interpretation forces students to be flexible, and prepared to alter their interpretations when the evidence demands it.

Technological Literacy

The arrowhead symbol indicates archaeology's concern with our understanding human technological literacy and how it has changed through time. Studying the technologies of different cultures makes students better able to be objective and critical about the technology of our own culture and its effects on our environment and society. Archaeological research also involves the effective operation of various tools and pieces of equipment such as scales, surveying equipment, and computers.

Personal and Social Values and Skills

Archaeological activities and information can contribute to the teaching of this C.E.L. in a number of ways. Because it is the study of people through time and in many environments, it generates a respect for the richness of human achievements and adaptability. Much of archaeological research involves working closely and effectively in group situations, which allows students to practice coordinating their efforts, designating tasks to specific people, cooperating, resolving conflict, and reaching consensus about their conclusions.

Independent Learning

Archaeology provides stimulating material to foster independent learning. Students follow the problems from proposal, through research design, conducting the research, analysis of the results, presenting the conclusions, and evaluating the entire process. Participation in archaeological activities can certainly make learning fun.

CHAPTER 7:

CLASSROOM AND OUTDOOR ACTIVITIES

The following activities are meant to provide teachers with ideas. Feel free to copy information for use in your class or adapt the activities to suit your special needs. The symbols in the margins indicate the predominant Common Essential Learning that is being exercised in that stage of the activity.

1. NEWSPAPER STRATIGRAPHY

Target Group

Grade 6 science (paleontology and fossils)
Grade 8 science (erosion and deposition)

Purpose

To demonstrate the law of superposition.
To demonstrate a common form of relative dating.
To demonstrate problems of redeposition, or other disturbance to archaeological deposits.

Activity

This is a simple discussion activity which makes stratigraphic concepts easy to understand. Bring a newspaper to school every day for a week and make a show of setting it on your desk, gradually forming a pile (DEPOSITION). At the end of one week, ask the students to describe what you did. Ask them where the oldest newspaper is lying, and how they know that. Pull out a flyer that has no date on it from out of or on top of a newspaper and ask the following questions:

?

A B C

How old is the flyer?
How do they know that?

If you went through the newspapers in the pile one at a time looking for an article, would the order of the papers in the pile remain the same?

Compare the newspapers with floods of a river, as in the following scenario. A river is jammed with ice one spring, and the flood is like a temporary reservoir of standing water, depositing a new layer of sediment on the ground surface along its banks. After the jam breaks and the water recedes, people visit that river bank. They drop artifacts as they prepare their nets and fish, and then leave. The next year, the river floods again, covering up the things left by the people. One year, heavy spring runoff causes the river to flood again. This time the water rushes over the ground and erodes the ground surface rather than depositing more sediment. The flooded river cuts through the fishing site, and carries some of the artifacts away, dropping them downstream when the water current slows down. These redeposited artifacts are not necessarily younger than the artifacts lying below them. This is one reason why archaeologists must take careful note of artifacts and their context—artifacts jumbled together with pebbles and bones of a similar weight have probably been redeposited, and the law of superposition no longer applies. Brainstorm about other types of disturbance that would be possible at an archaeological site (roots, burrowing animals, scavengers, etc.). How would these forms of disturbance be recognized at an archaeological site? (Roots push artifacts aside, burrowing animals throw artifacts behind them and leave holes for artifacts to fall into, scavengers remove bones from the site.)

2. CLIMATE CHANGE/CULTURE CHANGE

This activity is adapted from one out of the Teacher's Resource Packet from the Smithsonian Institution (see "References for Teaching Archaeology in Schools", Chapter 8).

Target Group

Grade 6, and others

Purpose

To practice interviewing techniques.
To provide an understanding of the relationship between culture and environment, and to illustrate that the relationship is as important now as it was in the past.

Activity

Atmospheric Environment Service in Regina (phone 780-5739) houses climate data for stations across Saskatchewan. For a small fee ($1.05/microfiche page, subject to change), you can obtain the records of monthly, daily, or yearly totals of precipitation for your local area. Students can use this information to construct graphs of average yearly rainfall over the past 30 or 40 years. Discuss patterns in the graphs: wet periods, dry periods, and general trends in recent years.

Armed with the graphs, students can interview local farmers or ranchers to find out how the specific fluctuations in rainfall have affected their operations—their overall productivity, new management techniques they have been forced to adopt, or new species they have had to introduce. If there is an obvious trend in the recent years on their graphs, ask the farmers what the future of their operation will be if the trend persists.

Students can summarize and report their findings in written form, or can make oral presentations. Have them relate their findings to the archaeological record by considering some of the following questions:

Does our society continue to adapt to climatic changes? Yes, but because of our lifestyle, we do not normally adapt by moving to more hospitable areas, as people often did in the past.

What adaptive measures can we practice that were unavailable to precontact peoples in the province? We have more control over the species that grow in an area, but we have still have no control over the climate.

What kinds of evidence will be available to future archaeologists to help them study the adaptations of rural Saskatchewan peoples? plant and animal remains, farm machinery, historic records of climate and food production

3. MAKING MAPS

Mapping a site is a great way to get field experience without disturbing a site (see Activity 10B). Any kind of site can be mapped, from features in a school yard, to features in an old farm yard, to tipi rings in a stone circle site.

3A. MAKING A MAPPING BOARD

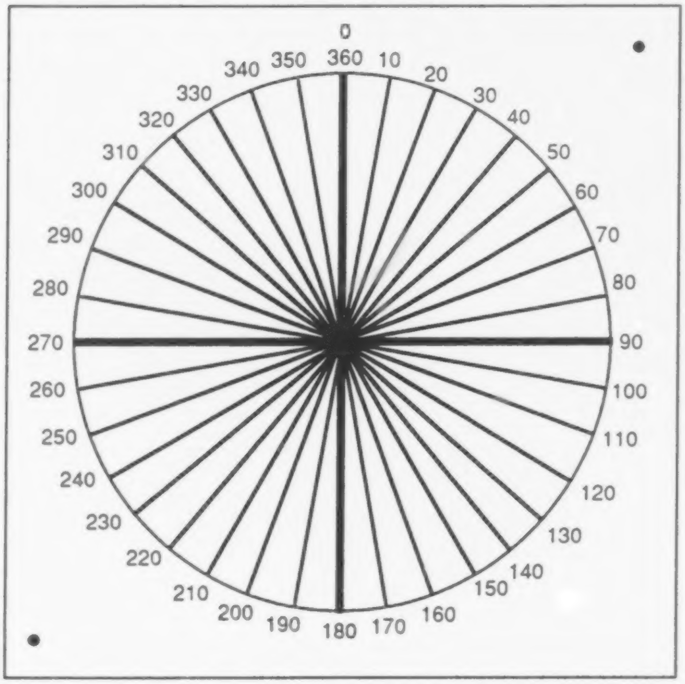
Target Group

Grades 7 and up, or the teacher can make one for use by the group in the next activity.

Purpose

To create a devise for measuring angles in the field.
To practice drawing angles and understanding degrees in a circle.
Option: This activity can be used in conjunction with the teaching of latitude and longitude to young students.

Figure 11: Diagram of a mapping board. The board would be anchored to the ground with long nails in the center, and two corners.


0
360
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350

Activity

A mapping board is easy to make and can be used to map sites. Students can make their own, or mapping teams can cooperate to make their board. At least one board per team is necessary for a mapping activity.

On a sheet of paper, draw as large a circle as possible using a compass (the exact size is unimportant). Enlarge the centre point so that it is clearly visible. Draw a line bisecting the circle. Use a protractor and ruler to divide the circle up into 10° segments. Choose two perpendicular lines and make them thicker. Draw tick marks around the circumference of the circle indicating the degree divisions (this step can be missed, and students can estimate the divisions when they use the board in mapping).

Cut out the circle and paste it onto a piece of heavy cardboard or plywood (a square piece is easiest to use, but it can be any shape). If a square is used, align the two thicker lines on the circle so that they point toward the midline of each side of the square, or toward the corners. Print numbers around the outside of the circle, indicating the degree measurements. Because the mapping board is used by securing it to the ground using long nails, these same nails can be used to make holes through the center and two corners of the board. The mapping board (see Figure 11) is ready for use in the mapping activity which follows.

3B. MAPPING A SITE

Target Group

Can be adapted for grades 7 and up. Younger students may enjoy mapping a site, although they will need help drawing the map back in the classroom.

Purpose

To practice rudimentary mapping skills.

To make scale drawings, using information obtained in the site survey.

To use geometric relationships such as corresponding, alternate, and supplementary angles, and similar triangles in a practical situation.

Equipment

Each mapping team should have the following:

- In the field
    - mapping board (see Activity 3A)
    - compass (optional, several groups can share one)
    - a long measuring tape (minimum 30 metres)
    - three long nails
    - note pad and pencil
- In the classroom
    - rulers
    - protractors
    - graph paper

Activity

Before beginning the activity, the instructor should choose any outdoor site with soft ground (to stick nails into) and objects or features which can be mapped. These features need not be archaeological, but can be features in the landscape such as fence posts, the waters edge, a clump of trees, etc. Divide the site into sections, each of which will be mapped by a different student team. If the students are in grades 7 or 8, make sure the site sections are small enough to be mapped with the tape length available (the furthest object is within one tape length of the mapping board). The boundaries of the sections can be marked with flagging tape, string, or pylons.

Divide the class into teams of three students each. Each student team will cooperate to perform the following tasks. Place the mapping board in any convenient place within the area to be mapped (at the south end of the site will ensure that younger students do not have to measure greater than 180°). Stick the center nail through the board: this will be the datum point for that area. Place a compass along the 0° line and rotate the board until the compass needle points to north (or approximate the alignment of the board to north). Secure the mapping board in place by pushing two more nails into the corner holes until they are flush with the board.

To map the site, hook the end of the tape measure on the center nail of the mapping board. Student 1 unwinds the tape measure and walks to a feature that is to be mapped. Student 2 makes sure that the end of the tape does not become unhooked. Student 3 writes down a description of what is being mapped (briefly, for example, "Ring #1" or "North corner of cellar depression"). Student 1 then calls out the distance from the feature to the datum (mapping board). Student 2 calls out the angle indicated by the tape along the mapping board. Student 3 writes down both figures next to the feature description (see Table 1). The team continues with these tasks until all features in their section have been mapped. Make sure that the students

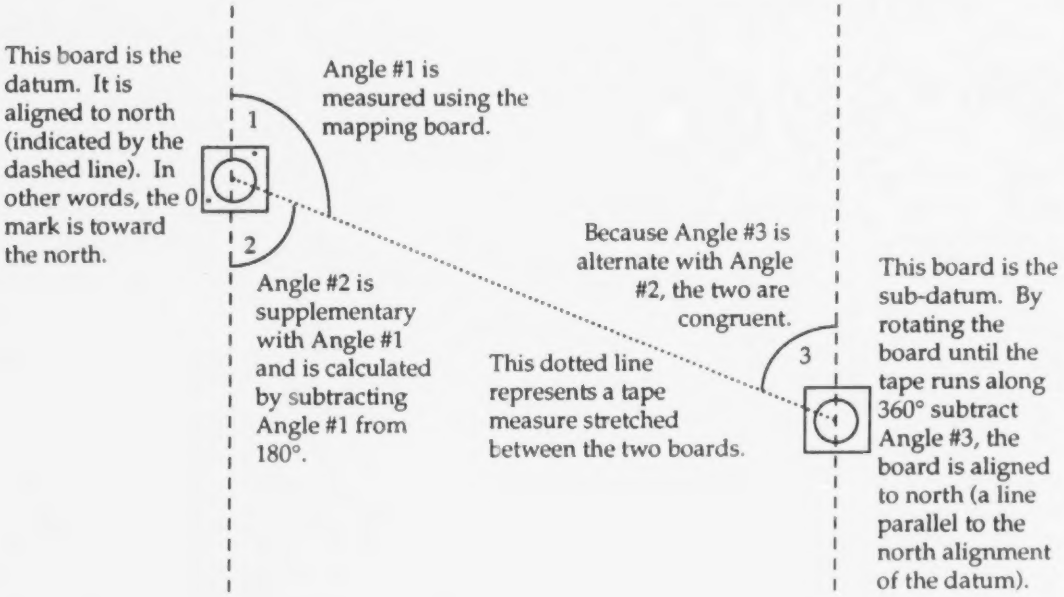

This board is the datum. It is aligned to north (indicated by the dashed line). In other words, the 0 mark is toward the north.
Angle #1 is measured using the mapping board.
1
0
2
Angle #2 is supplementary with Angle #1 and is calculated by subtracting Angle #1 from 180°.
This dotted line represents a tape measure stretched between the two boards.
Because Angle #3 is alternate with Angle #2, the two are congruent.
3
This board is the sub-datum. By rotating the board until the tape runs along 360° subtract Angle #3, the board is aligned to north (a line parallel to the north alignment of the datum).

Figure 12: Diagram and explanation of the geometric relationships which allows surveyors to move datums while keeping the proper alignments.

take turn performing the different tasks. In order to eventually tie the sectional maps together, it is essential that the teams include the datums of surrounding teams as points to be mapped.

1 2 3

If an accurate master map of the site is the goal of this activity, and if the students are familiar with geometric relationships such as the congruence of corresponding and alternate angles (Grade 9 or higher), the mapping boards should be aligned more carefully so that the individual team maps can later be joined up (see Figure 12). This entails coordination and cooperation between groups, and should be supervised by the teacher. Begin with a main datum—a single board which has been aligned to north and secured with three nails. Choose a sub-datum and place a mapping board on it secured with a central nail. Stretch a tape measure from the datum to the sub-datum and measure the distance and angle from the datum (Angle #1). Calculate the number of degrees in the supplementary angle (Angle #2). Rotate the sub-datum board until the tape measure lies along the measurement equal to Angle #2 (which is congruent to the alternate angle—#3) subtracted from 360°, and secure the subdatum with two more nails. The sub-datum board will now also be aligned to north. To make sure that the students understand the geometry of changing datums, discuss the steps in Figure 12 in class before going into the field. This process of tieing datums together can be repeated, creating as many sub-datums, or sub-sub-datums as required for the numbers of student teams involved.

Archaeologists like to relate their datums to a relatively permanent point such as the corner of a buildings, or a survey bench mark. This allows future archaeologists to easily find the site and features by first finding the permanent reference point. Students can tie their information to a permanent reference point: after securing the mapping board to the site's main datum point, measure and record the distance and direction from datum to the permanent reference point.

In the classroom, students can use the information recorded by Student 3 to draw a map of the site. On graph paper, a point is chosen as the datum, and the features are plotted using a protractor to measure the angle and a ruler to measure the distance (see Figure 14 with the next activity). Maps of adjacent groups can be joined by overlaying the common datum point, and retaining the north alignment (make sure the vertical lines on the graph paper remain vertical). This will result in a composite map of the site. If the team datums have not be aligned as illustrated in Figure 12, the sections of the composite map will probably not match up very closely. Alternatively, each student can individually plot the points from all of the groups.

4. CEMETERY ARCHAEOLOGY

Target Group

This activity can be adjusted to suit the interests and abilities of most grades, but is most suitable for students from grades 7 upward (see also Activity 3).

Purpose

To practice the steps taken by archaeologists in their studies:
1) identifying research problems
2) choosing the best methods to use
3) collecting the data
4) analyzing the data
5) presenting the results.

To illustrate how archaeologists use artifacts to deduce characteristics of a culture, and to study changes in the culture over time.

To practice mapping skills.

To foster respect for cemeteries as historic sites (getting away from the idea that cemeteries are spooky).

Necessary Equipment

- In the Field
  - surveying equipment (see Activity 3B)
  - tombstone record forms
- In the Classroom
  - rulers
  - protractors
  - graph paper
  - calculators or computer spreadsheets to analyze the data (to calculate average figures, percentages, etc.)

Activity

Because of ethical concerns when dealing with people's ancestors, students should be prepared for this activity by taking part in thorough discussions about proper respect for the dead and their belongings. Make sure the class understands the gravity of their project: that they are studying real artifacts which, although created by people in the past, continue to be important symbols to friends and relatives of the deceased today. Archaeologists must show similar sensitivity and responsibility when dealing with archaeological sites, and try not to disturb remains unless it is unavoidable. Students should be given the option of not taking part in the activity, and all parents should be informed about the nature of the activity, so that their concerns can be dealt with to avoid unnecessary offence. Choose a cemetery to study, and make sure that grounds keepers are aware of and supportive of the activity.

Cemeteries hold a wealth of information about a community and its changes over time, much of which can be studied by looking at the tombstones. Get the students to brainstorm about what kinds of information a cemetery can reveal about a community: how old the community is, changes that have occurred in length of life span, life span differences as related to social group or sex, family size and composition, changes in ethnic composition of the community over time, religious beliefs concerning death, dates of epidemic diseases or tragedies and which groups these affected, etc. The history and growth of the cemetery can also be explored, by looking at the distribution and chronology of tombstones, and by looking at changes in tombstone style over time. Have the students decide which kinds of questions interest them the most; they can even form hypotheses about specific relationships that they plan to test by observation in the cemetery. As a class, make a list of the kinds of information that should be recorded about the cemetery in order to provide the necessary information to answer the questions (including such things as location of stones, size of stone, material of which it is made, date of birth and death, sex, surname. Use this list to design a tombstone record form (Figure 13).

1 2 3

At the cemetery, break the class into groups of 3-5 students, each with a section of the cemetery to study (about 5-15 tombstones, depending upon amount of time available). Make sure that adult supervision is sufficient to keep all students under control. Have the students map their section of the cemetery by choosing a datum (starting point), and measuring the distance and direction of other tombstones from their datum. (Refer to Activity 3B for detailed instructions for mapping a site.) The map can be a rough sketch, made by pacing off distances and estimating angles, or it can be quite exact, using compasses, a mapping board (see Activity 3A), tape measures, or even a surveyor's transit. If a detailed map is being made, it is easier to record the measurements in a notebook (see Table 1) and draw the map back in the classroom using rulers and protractors (see Figure 14). Make sure that each group also maps the datum of the neighbouring group, so that the section maps can be joined together to form a map of the cemetery. The maps should indicate major features of the environment (trees, brush, and large hills, etc.) as well as a separate number for each tombstone.

Then each group must record the necessary information about each tombstone in their section. The use of standardized forms ensures that all groups will record the same types of information (Figure 13). Unique features (the presence of more than one person's name on one stone, for example) can be mentioned in notes at the bottom of the form. Make sure that descriptions can be matched with individual tombstone locations drawn on the map (include the distance and angle from datum on the record form for insurance).

Back in class, the students can pool their information, building up a database of all tombstones and their location in the cemetery (this can be done in a computer database, if the expertise is available). Each group can be made responsible for answering one of the questions, and can use the data to determine if they can see any consistent relationships among the different categories of information. Groups can report their findings to the class, showing their map and graphs of their data. Class discussion of the results should include examination of assumptions, the validity of the sample (is it large enough to prove the findings?), and accuracy and relevance of the interpretations.

After the reports have been made, discuss as a class what surprising things the study has indicated about the community. Ask the students to consider how their questions dictated the methods of their fieldwork. Discuss how your study would have been different if the cemetery was

Figure 13:

Forms can be made up to contain any type of information that interests the class. Multiple choice answers allows some consistency in description between groups; answers can be elaborated in the notes at the bottom of the form. If this form is made up on a computer database, the information gathered in the field can later be entered into the computer; students can then practice using the computer to manipulate the information and generate tables or charts to show information such as average figures for different classes of tombstone (for example, average width of tombstone for each sex class). Alternatively, maps can be drawn indicating the distribution of different surnames or religion affiliation within the cemetery.

TOMBSTONE RECORD FORM

Tombstone Number: Group Number: ____________

Distance from datum: Angle from datum ____________

Sex: Male _____ Female _____ Surname: __________________

Year of Birth: ________ Year of Death: ________ Direction Facing: ____

Size: Width ___________ Height ___________ Thickness ____________

Shape: Rectangle ____ Rounded Rectangle ____ Cross ____ Other ________

Material type: Marble ____ Granite ____ Cement ____ Other __________

Type of Decoration: Engraved Carving _____ Sculpture _____ Colour_____

None _____ Other ____________

Subject of decoration: Supernatural Figure _____ Human ____ Animal

Flower _____ Cross _____ Geometric Design _____ Other____________

Extent of Decoration: Ornate _____ Moderately Ornate _____ Plain _____

Religious Affiliation: Catholic ____ Protestant ____ Other ____ Unclear ____

Epitaph: ____

____

Other Notes: ____

____

____

____

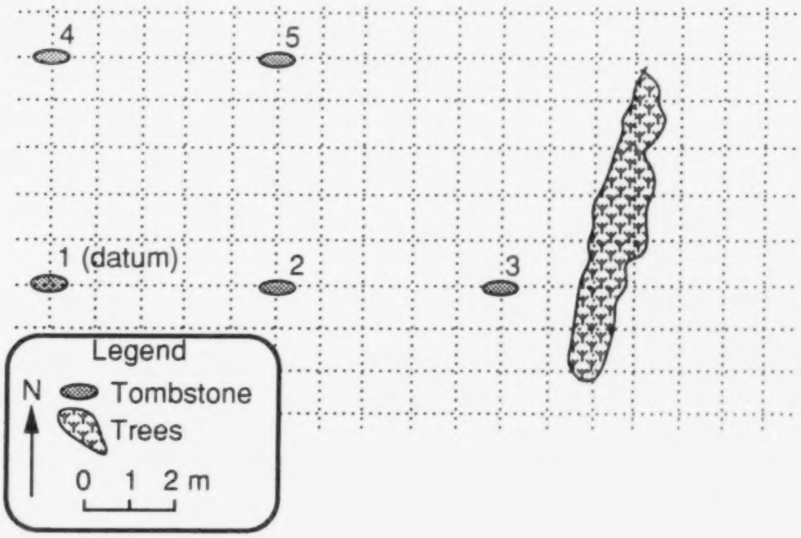
____

scheduled for destruction, and this was your last chance to save information about this important site (you would have tried to retrieve as much information as possible, even if it was not directly related to the questions which you were trying to answer, because future archaeologists would have to rely on your notes to answer new questions).

Table 1: Mapping Data for a Fictional Cemetery

Subject	Direction (° off magnetic N)	Distance (m)
Datum (Tombstone 1)	0	0
Tombstone 2	90	5
Tombstone 3	90	10
Tombstone 4	0	5
Tombstone 5 (Datum for Group 2)	45	7.1
Tree cluster (N end)	70	14
Tree cluster (S end)	100	12

Figure 14: Map drawn from data in Table 1.



5. ART ACTIVITIES

One of the ways archaeologists learn about past lifestyles is by trying to copy the artifacts and features that they find, using only materials that would have been available to the people they are studying. Some of these "replication studies" can be incorporated into art classes.

5A. MAKING PREHISTORIC-STYLED POTS

Target Group

Can be adapted for students of any age.

Purpose

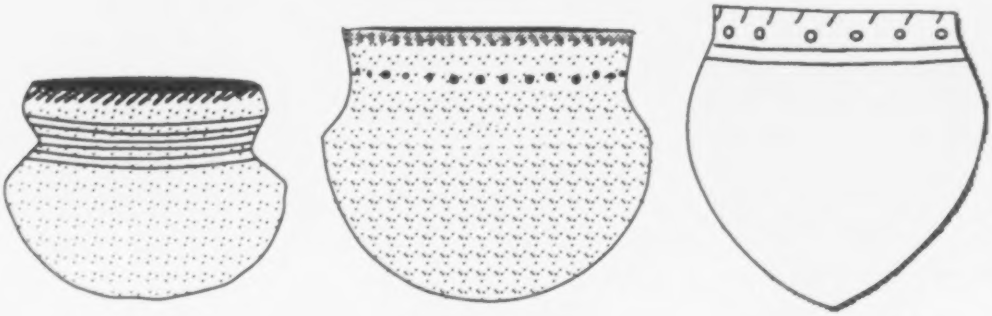
To demonstrate the techniques used by precontact craftspeople.
To develop students' appreciation for the skill possessed by the craftspeople.

Activity

With a few adjustments, the pottery techniques presented in the 1978 Sask. Ed. Division II Curriculum Guide (pp. 167-173, 179-188, 235) can be used to reconstruct the process used in precontact times to produce pottery in Saskatchewan. For younger students, pinch pots can be formed using commercial clay and dried. For older students, natural materials can be used. Native clay can be dug from local sources. It can be mixed with temper (sand, crushed rock or crushed fired pottery) at a ratio of about 4 parts clay to 1 part temper. This paste mixture is then formed into pinch or coiled pots, thoroughly dried, and fired in open fires. The firing technique is the most difficult (see below), and often results in broken pots. The process involved in creating pottery from scratch can be simplified (by eliminating the firing, for example) according to student interests, abilities and time availability; however, participation in the entire sequence of tasks will create a fuller appreciation of the precontact way of life. The form of pot can be entirely original, but older student may want to copy the shape and design patterns of precontact vessels from different areas of Saskatchewan (Figure 15).

Firing Technique:

Make sure the pots are completely dry (at least seven days of dry weather). After obtaining permission from fire authorities, dig a pit and build a large bonfire in it. Let the fire burn down to hot coals. Place the pots near the fire to slowly heat up. Place the pots in the coals to heat further.



associated with
Plains Side-notched

Clearwater Lake
Punctate

Laurel conoidal
vessel

Figure 15: Some precontact pot shapes and designs found in Saskatchewan.

Dig the pots into the coals, putting coals inside and around the pots. Bury the pots and coals under ashes and dirt and let them heat for several hours. Finally, carefully rake the pots out of the fire.

Make sure the students are aware of the danger of firing, and that their pots may break in the process. If breakage occurs, stress the fact that the pots of precontact potters usually broke as well, either during firing or in everyday use. Archaeologists who dig up the pot fragments (called sherds), try to reconstruct the pots, to determine their form and what they were used for. The students can collect the broken pieces from their pots and try to reconstruct them using masking tape or glue—a task made particularly difficult if the sherds from several broken pots are mixed together or if some of the pieces are lost in the dirt and ashes. Boxes or basins filled with sand are helpful in giving support to glued pieces as they dry. This additional activity can turn a "failure" into an interesting and useful learning experience, as students get to experience one of the painstaking tasks often undertaken by archaeologists.

5B. POTTERY PUZZLES

If time is limited, or if a less extensive activity is desired, this activity will provide an informative and entertaining alternative to Activity 5A.

Target Group

Can be adapted for grades 3 to 6.

Purpose

To illustrate precontact pottery types
To illustrate problems encountered by archaeologists in pottery reconstruction.

Activity

Have students design and draw a picture of a pot in a similar style to those made by Saskatchewan's precontact peoples (see examples in Figures 15). They should include some form of decoration along the rim, neck or shoulders of the vessels (incised decoration is easiest to draw). Finally, they should colour the pots in earth tones, either simulating the mottled blacks, greys, and browns of vessels that have been fired in open fires, or simulating the painting of pots with precontact materials such as red or yellow ochre (iron oxides). After the drawings are completed, have the students cut out their pictures and cut them into puzzle pieces (10-20 pieces, depending of the skill level of the students and the time available). Divide the class into groups of five or fewer students and have them mix up their pieces. Each group should then exchange their pieces for those of another group, and attempt to reconstruct the vessels.

After the activity is completed, discuss the problems that they encountered using some of the following questions:

Could they easily distinguish which "sherds" belonged with which vessel?
Could they tell what part of the vessel each sherd represented (the rim, the neck, etc.)?
What additional problems would an archaeologist encounter if he or she discovered the remains of the vessels? Some or most of the pieces would probably be missing, and the actual number of vessels would be unknown at first.

5C. ROCK ART

Target Group

Can be adapted for students of any age.

Purpose

To demonstrate the techniques used by precontact craftspeople.
To develop students' appreciation for the skill possessed by the craftspeople.

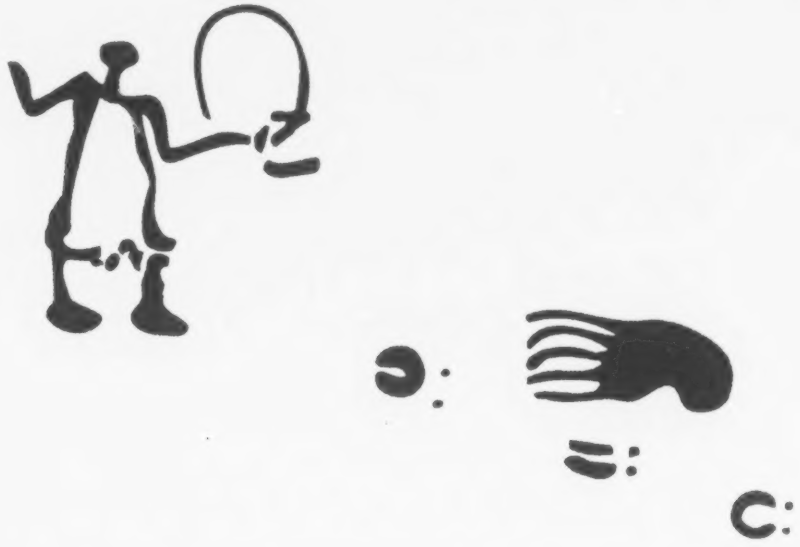


Figure 16: Petroglyphs from the St. Victor site. Tim Jones, an anthropologist who specializes in rock art, identifies the figures as a man beating a drum and bison or elk and grizzly bear tracks.

Rock art is one of the few precontact drawing forms which has withstood the ravages of nature and remains available for archaeologists to study. Common subjects were simple human figures, animal shapes, or animal footprints (Figure 16). Images were either painted on (pictograph) or carved into (petroglyph) the stone surface. Students can be introduced to the art form by attempting it themselves.

If sandstone outcrops occur in or near your area, obtain one or several large flat slabs (the softer the better for petroglyphs).

5Ci. Pictograph

Mix a thick batch of tempura or other paint type on a piece of wood. Or for greater authenticity, attempt to make natural paints and stains by crushing berries or ochre (iron oxide), and mix them with water or grease. Students can experiment with making and using different paint materials to see which work best. Apply the paint to the rock surface with natural "brushes" made from sticks or twigs, feathers, or any other items the students come up with.

5Cii. Petroglyph

For petroglyphs, students can draw a simple shape or figure with charcoal or pencil on the stone. This can be done individually, or working together in groups. Incise the shape using a rock to rub and peck at the sandstone, or use a strong stick to rub sand mixed with water against the sandstone to wear grooves into the rock. The process of creating the petroglyph can take an extremely long time, and creates a great respect for the patience as well as the skill of the precontact craftspeople. To avoid monotony and fatigue, this activity might best be done in a relay system of students working in ten minute shifts, in conjunction with another activity.

Because sandstone erodes easily, petroglyphs are often extremely faint and difficult to make out. Making rubbings of the petroglyphs is a useful way to copy the glyph and often reveals details that would not show in a photograph. Have students make rubbings of their petroglyphs (see methods outlines in Sask. Ed. Division I and II Art curriculum guides).

5D. BEADING

The bow loom has been widely used by North American Indian groups. Although shell and bone beads were used in precontact times, glass beads obtained through the fur trade became the most popular in more recent times.

Target Group

Grade 5 to adult.

Purpose

To illustrate beading methods.
To improve eye-hand coordination and exercise creativity.

Activity

Have students collect suitable branches—strong yet flexible—for their looms. Using a knife or sharp rock, notch the stick about 1 cm from either end. Warp threads travelling along the length of the bow usually number from 6 to 10, and should be one bead's width apart or slightly more. They can be strung onto the bow in two ways.

The first, illustrated in Figure 17, involves tieing a long thread to one end of the stick and wrapping it from end of the stick to the other, tightly so that the stick bows. Brace the stick against the ground or table to maintain

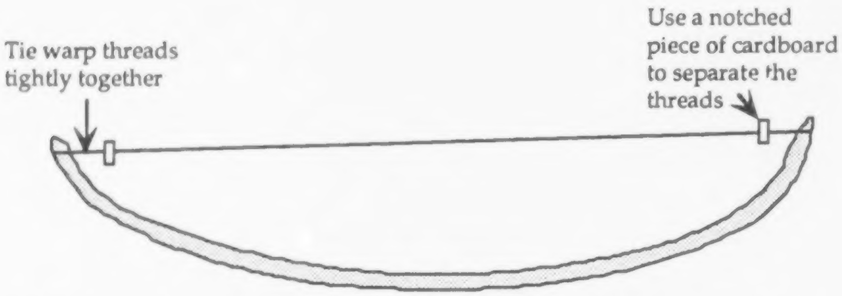

Tie warp threads tightly together
Use a notched piece of cardboard to separate the threads

Figure 17a: Bow loom from the side. A string is wrapped tightly around the two ends of the stick, making the stick bend. Keep wrapping until at least five warp threads travel from one end to the other. Notching the stick will keep the warp threads from slipping. The warp threads are tied together tightly near the bow ends. A piece of cardboard with one notch per warp is inserted, with each warp thread firmly pushed into the corresponding notch; the notches on this cardboard should be slightly farther apart than the width of a bead.

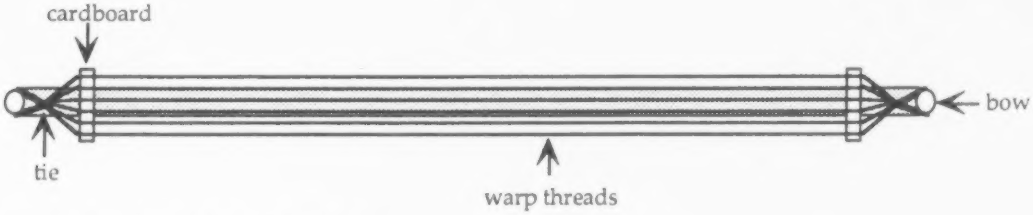

cardboard
bow
tie
warp threads

Figure 17b: Bow loom from above.

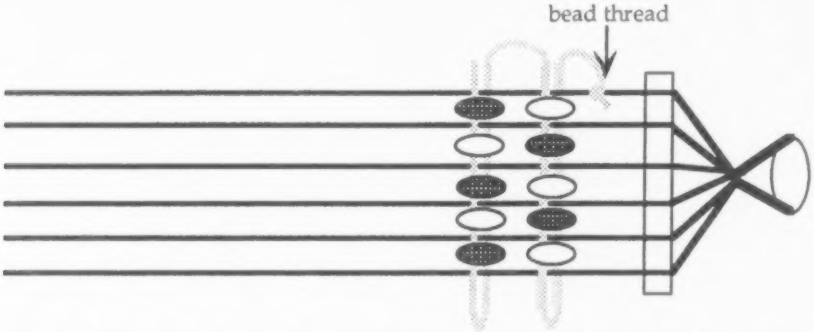

bead thread

Figure 17c: To bead, tie bead thread firmly to one of the warp threads. String one fewer beads than there are warp threads onto the bead thread. Bring the thread and the beads under the warp, and arrange the beads so that there is one bead between each two warp threads. Push firmly with one finger from below the beads, pushing the beads up between the warp threads. Bring the bead thread around the outer warp thread and push the needle back through the beads, this time above the warp. Pull the bead thread tight. Continue with a new set of beads.

the bow as you wrap. When you have the desired number of warp threads between the bow ends, tie the loose thread end to the bow. Tie the warp threads tightly together near each of the bow ends, and then insert a notched piece of cardboard to keep the warp threads the desired width apart (about one bead's width).

The second method is to cut two rectangles of heavy leather. Punch one hole in each rectangle large enough to fit over the bow end. Using a threaded heavy leather needle, pierce one piece of leather and knot the thread. Pierce the second piece of leather, leaving a length of thread between the leather pieces about 10 cm shorter than the length of the bow. Pierce the first leather again, about one bead's width from the first needle hole, leaving the same length of thread between the leathers. Continue sewing between the leather pieces until you have the desired number of warp threads, and tie the thread end securely. Bend the loom stick and loop the leather rectangles over either end, securing them in the stick notches.

To bead, tie the beading thread securely to an outside warp at least 5 cm from the bow end. Thread a thin beading needle and one fewer beads than there are warp threads onto the bead thread. Bring the bead thread and beads under the warp threads, and arrange the beads so that they fall one between each two warp threads. From below the beads, press with one finger along the bead row, pushing the beads up against the warp threads, making sure that one warp thread falls between each two beads. Bring the bead thread out below the outside warp, and insert the beading needle back through the row of beads, this time above the warp threads. Thread another row of beads onto the bead thread and repeat the process, remembering to bring the bead thread around the outside warp. Continue until the beadwork is the desired length, and tie off the bead thread securely. Remove the warp threads and beads from the loom, leaving long thread ends. Knot the warps together at each end. The bead work can be left as it is, or it can be sewn (hiding the warp ends underneath the beads) to a piece of leather or heavy cloth to form a bracelet, bookmark, or decoration on an item of clothing.

6. SOLVING ARTIFACT MYSTERIES

The point of any analysis or classification activity is missed if objects are given a name simply because that is what it would be called in a book. The form of an object must be described because it is an essential clue to the function of the object. Once described, archaeologists compare the form of the artifact with the form of similar items with which they are familiar. They make an analogy, assuming that similarity in form between two objects also means similarity in what the objects were used for. They call a flat thin pointed stone tool an "arrowhead", not simply because arrowheads have been described from other archaeological sites, but because the tool shares properties with items known to be used to tip arrows today. The following activity explores the problems involved in artifact analysis and is loosely based upon one by Parker B. Potter Jr. (Archaeology and Education 1:1:11-13).

Target Group

Grade 4 to 12.

Purpose

To illustrate the fact that artifacts do not come out of the ground with an identity, but that their identity is created by the archaeologist.

To introduce the concept of analogy, and how it is often used in archaeological interpretation.

Activity

Hold up two objects in front of the class, one which is of a familiar type (for example, a framed picture, an arrowhead) and one which is unfamiliar (for example, a kitchen gadget, or a mechanical part). Lead a class discussion about the nature of the two objects using some of the following questions:

Have you ever seen either object before? No (because you have just brought them from home).

What are these objects? The familiar object will be instantly labeled, whereas the unfamiliar one will probably not be.

After some guessing as to the nature of the second object, reaffirm what has just happened: although the two objects have never been seen before, one was easily identified, whereas the other was not.

Why were you able to identify one object and not the other? The students had seen things similar to the familiar object before, whereas the other object was entirely new.

When archaeologists find objects, some are easily identified, as with arrowheads, whereas some are more problematic. Those that are unfamiliar are described, and compared with objects that are known from a living situation (a form of analogy); if two items are similar in form, it is assumed that they are also similar in function. Suitable analogies can be looked for in early accounts of the tools that were being used by the Indian groups when the first Europeans arrived, or similar objects may have been used by early settlers, many of whom still live in Saskatchewan and remember the old ways. The context of an artifact (the other debris around it) can also provide important clues. For example, if an unknown artifact was found near scrapers and fleshers, an archaeologist would assume that the unknown artifact was also used in hide processing; the search for analogies would begin in historical descriptions of hide processing, or by talking with modern people who process hides using traditional methods. Finding analogies in living situations does not provide proof of an artifact's function, but it allows an important starting point for the interpretation of human activities at a site—interpretations which may have to change if other pieces of the archaeological data are inconsistent with the assumed artifact function.

Getting back to the subject of the unfamiliar item in the classroom, provide the students with a clue to the identity of the item—for example, the room in your house from which it came. Pass the item around the class, and have the students take careful note of the properties of the object—its size, weight, how it is made, shape. This analysis can involve the use of instruments such as scales and calipers. Ask the students to make an analogy with a known item that has similar properties, and suggest some activities that the unknown item would be suitable for. If possible, experiment with some of the students' ideas to see if the mystery artifact would indeed perform well in the way suggested. Discuss which is the best interpretation of the item—the interpretation that is most consistent with all of the properties of the artifact. Finally, tell the students what the item is actually supposed to be used for.

The point of the activity is that all artifacts are unknown when they emerge from the ground. The archaeologist must assign meaning to the object by comparing it with objects with which he/she is familiar. This process can be almost instantaneous, it might take months of research to find a suitable analogy, or a suitable interpretation might never be uncovered.

7. ANALYSIS AND CLASSIFICATION

Archaeology is much more than excavation. Elaborate activities can be based upon what happens in the laboratory—artifact analysis and classification.

Target Group

Can be adapted for grades 1 and up.

Purpose

To illustrate one way that archaeologists group artifacts for analysis.
To illustrate that archaeological classifications usually have greater significance than simply groups of similar artifacts—the distinguishing group characteristics relate to artifact age or function.
To illustrate the importance of finding artifacts in context.

Activity

Dump a box of assorted buttons on the desk (or have each student bring a selection of buttons from home). With students working individually or in small groups, give each group a handful of buttons. Have the students divide their buttons into groups of similar buttons (based upon whichever characteristics they want—size, colour, shape, number of holes, what they are made of). Lead a discussion about the classifications that the students developed:

Why did you divide the buttons the way you did?
What do the differences between the groups mean? (For example, are different groups of buttons used for different purposes?).

These are difficult question to answer because the characteristics upon which the classification is based were arbitrarily chosen.

But what if the buttons were found during an excavation by an archaeologist? Then there would be other types of information available 1) to help decide which criteria are important in classifying the buttons, and 2) to help interpret the meaning of the categories. For example, buttons found in the following stratigraphic context would suggest some interesting ideas.

Plastic buttons
Metal buttons
Bone buttons and wood buttons
no buttons present

Using the example of site stratigraphy illustrated above, or another similar one, discuss the importance of finding artifacts in some context. The additional information of artifact context helps answer a number of questions such as the following:

Did the clothing worn by the people who left behind the buttons change through time? (changing methods of fastening, and style of fastening)
What does the change in the material used to make the buttons tell us? (changing technology, changing style preferences)

If precontact artifact collections are available from a local collector or museum, the above activity can be repeated for artifacts. Artifact groups can even be divided into subgroups, particularly if a wide variety of tool and material types are present.

The button activity can also be related to one of the projectile point classification systems used by the archaeologists in Saskatchewan (illustrated on the timelines, Figures 7 and 8). Have students use what they have learned about button classification to write a brief report about changes in point styles through time. A preliminary class discussion could consider the following questions:

What do differences in point size and style mean? (different people may have made them, the people's style preference changed, different weapons were used)
Could the sequence have been determined without the excavation information which revealed which points lie close to the surface and which are deeper?

8. GARBAGE CAN ARCHAEOLOGY

This activity is adapted from one by Patti Bell (see "References for Teaching Archaeology in Schools", Chapter 8). Archaeologists study the things that people leave behind—in other words archaeologists study other people's garbage. Garbage cans are great for explaining the law of superposition, as new garbage is deposited on top of garbage that was already in the can. By using familiar materials such as our own garbage, students are better able to understand archaeological ideas and techniques.

Target Group

Suitable for grades 5 to adult.

Purpose

To illustrate that archaeological methods can be applied to our own culture.
To illustrate the stratigraphy and how it relates to age of materials.
To gain practice in careful observation and recording of information.
To practice interpreting the meaning of groups of artifacts in context.
To practice working in groups to organize tasks and reach consensus in interpretations.

Materials Required

several pairs of rubber gloves (preferably one pair per student)
one full garbage can per five students
one plastic drop sheet per each group (could be large garbage bag opened up)
note pads and pencils

Activity

Collect cans of garbage from different parts of the school, or bring some from home. Try to get ones with little or no wet material. This activity is best done in a large open area such as a gymnasium or out of doors, although it can also be done in a room with several large tables. Divide students up into groups of a maximum of five. Each group receives a drop cloth, several pairs of rubber gloves and a can full of garbage. The group must organize themselves and designate one person as record keeper, and another as spokesperson.

The students lay the drop cloth out and begin "excavating" their garbage can—carefully removing items, beginning at the top. Each item is placed on the drop cloth. The students identify each one, and analyze it for any information that could help them understand who the people were who threw it away, what activity they used it in, and when they disposed of it. The record keeper identifies each item by number and writes down as many of the student observations concerning that item as possible. After they have completed the garbage can excavation, or when 30 minutes remain in the time allotted for the activity, the students can discuss within their group what they have discovered about the garbage can culture by answering some of the following questions:

What activities are represented by the garbage?
When did the activities take place?

In what order did the activities occur, if there is more than one activity represented?
What is known about the people who threw away these items? Who were they, and how many where there?
Where did the garbage cans come from?

Finally, have each group in turn share what they have discovered about their garbage cultures with the rest of the class. The spokesperson for the group can lead the explanation, but other students in the group should be encouraged to add comments when the spokesperson has finished. The rest of the class can then suggest alternate interpretations for the garbage. An optional conclusion for this activity would be for each student to write a report about the activity, explaining their interpretations and exploring the assumptions behind those interpretations.

9. SIMULATED EXCAVATION

Target Group

Can be adapted for grades 4 and up.

Purpose

To practice excavation and interpretation techniques used by archaeologists.
To exercise a variety of critical and creative thinking skills.
To practice working cooperatively in group situations.

Activity

An excellent step by step description of how to set up a simulated excavation is described in the Archaeological Survey of Alberta's Dig and Discover: Archaeological Excavation for the Classroom (see "Fact Sheets", Chapter 8). The pilot version of the Sask. Ed. Grade 9 Social Studies Activity Guide also contains instructions for a simulated excavation (Activity 6 in the pilot version of the guide). Students can create their own sites or the teacher can create a site (perhaps in the high jump pit in the school yard). Dig 2 is a simulation game which is commercially available and very popular (see "Multimedia Kits" in Chapter 8).

Try to ensure that proper archaeological techniques are followed as closely as possible to avoid the deterioration of the activity into a treasure hunt. Relate the units to a grid system, and use small tools (trowels, spoons, grapefruit knives, etc.) to carefully scrape away the soil. Make sure that notes are carefully recorded. This kind of activity will only work if meaningful patterns of artifacts are buried, because the activity should depend as much upon interpretation of where things were found as what things were found. Because archaeologists depend upon the law of uniformitarianism, students should be able to make interpretations about what they find during an excavation by considering what they would have to do to leave behind the same patterns of artifacts.

Final projects could include a catalogue of artifacts (containing a description of each artifact and where it was found), and a final report including information about the methods that were used, the results of the excavation, and an interpretation of those results.

10. FIELD TRIPS

10A. TOURS OF ARCHAEOLOGICAL EXCAVATIONS

Target Group

Grade 4 and up (and younger students if there are opportunities for special activities at the site)

Purpose

The purpose of the activity can vary with the desires of the teacher and archaeologist

Activity

One of the best ways to learn about archaeology is to visit an an active excavation with opportunities for class participation. Unfortunately, these opportunities are rare. They should be taken advantage of whenever possible, even if the timing of the trip is not ideal. Most archaeological projects are too small and of short duration to provide opportunities for school groups. Without a doubt, if an archaeological project is capable of incorporating school tours into their schedule, they will advertise this service to local school boards and museums.

Archaeological excavation can only be done in the warmth of summer, usually some time from the middle of May to the end of September. This leaves little time for school groups to become involved, even if both the schools and archaeologists are willing. The core area study sections into which archaeology fits most easily are usually taught outside the short field season, making out-of-school trips difficult to coordinate.

There are several solutions to these problems. One is to book the tour whenever the opportunity presents itself, and tie it in to your curriculum in whatever way you can (see Chapter 6 for some ideas). Another possibility is to have a more limited tour of an archaeological site with surface features, such as a tipi ring site, a medicine wheel, or a rock art site (see Activity 10B). A final option is the simulated excavation activity which could be carried out in the high jump pit in the school yard, or in a neighbourhood lot (see Activity 9).

If a tour of an archaeological site is possible, there are several points to keep in mind. Tours of excavations are most interesting for students in at least grade 4, particularly if the archaeologists are not prepared with specific hands-on activities. Find out the following information before visiting the site:

1. how to get there
2. if there are any group age and numbers restrictions
3. what to bring and what to wear
4. what kinds of activities will take place and
5. what kinds of preparation can be done in class before the tour.

Archaeological projects vary greatly in their degree of school program development. Some have special staff to deal with school groups, and developed tour outlines. Others have no formal tour agenda, but are willing to accommodate school groups whenever possible. Although the archaeologist will usually guide the school group, it is sometimes necessary for the teacher to take the lead in instructing the class during the visit.

If a teacher or archaeologist is giving a tour of an archaeological site or excavation, they should be sure to include the following information:

1. Students should understand what archaeology, artifacts, and sites are.
2. The purpose of the archaeological research at the site being visited should be explained, as well as how the site was discovered.
3. The site should be placed into the context of Saskatchewan history or the precontact period.
4. The nature of archaeological excavation should be briefly explained, using the activities at the site being visited as an example.
5. Emphasize the fact that all aspects of the excavation are recorded in notes, drawings, and photographs.
6. Students must achieve some understanding of how archaeological materials are interpreted to explain something about life in the past.

7. Archaeological sites and materials are delicate and important. They must be treated with respect.

10B. TRIPS TO ARCHAEOLOGICAL SITES WITHOUT EXCAVATIONS

Even if there are no active excavations in your area, undeveloped archaeological sites can provide opportunities for other activities: finding features or mapping the site. If you want to visit an undeveloped archaeological site for a field trip, there are several steps to take.

The first step is to plan what type of activity you want to do. Excavation is out of the question without the involvement of a professional archaeologist and crew (which runs into large expenses). School groups would be better prepared to find all of the features in the site, and make an accurate map of the site (see Activity 3B). Individual features such as tipi rings or cellar depressions can also be measured, described, and drawn to scale.

The second step is to find a suitable site. Heritage Resources—Archaeology (787-2809, see Chapter 9) is a government organization that keeps an inventory of all archaeological sites in Saskatchewan. Staff at HR—A will be able to suggest a suitable site in your area. If you know of a site that has never been recorded, you should consider filling out a Saskatchewan Archaeological Resource Record form so that the site will be added to the provincial inventory (this can be developed into a classroom activity in itself). Forms and assistance are available from HR—A.

Third, and before visiting the site, obtain permission from the landowner. Either travel to the site to get an idea of the vehicle access, terrain, and visible archaeological features, or ask the landowner about the site and its surroundings. This will save unnecessary work if the site or its location is not really suitable.

The fourth step is to do some background research on the site. For example, if the site is an early homestead, the class could write to the Saskatchewan Archives Board (University of Saskatchewan, Saskatoon, S7N 0W0) and try to find out the name of the landowner.

The fifth step is to apply for an archaeological permit from Heritage Resources—Archaeology. This involves describing the site location and the activity. Filling out a permit proposal a useful learning experience for the class in itself. Forms and assistance are again available from HR—A. Under proposed amendments to the Heritage Properties Act, it would be necessary to hold permits only for those school activities that would have a lasting impact upon the site (because they involved collecting artifacts, for example). If these amendments are passed, activities such as mapping sites would not require permits.

The sixth step is to prepare the class by discussing the activity. Include a thorough discussion of rules in the field.

1. Close all gates as soon as you go through them
2. Do not chase cows or other farm animals
3. Do not litter
4. Finally and most importantly, DO NOT REMOVE OR DISTURB ARTIFACTS. If someone picks up a stone tool, bone fragment, or piece of metal, make sure that they put it back down in exactly the same place. In that way, an archaeologist studying the site later will find the artifacts in their original locations.

The seventh step is the field work itself. It is essential to instill a sense of the importance of the research on the students. The goal is to get as much information as possible about the site so that the class can gain a better understanding of the lives of people in the past. But at the same time, the class has a responsibility to preserve the site so that it can be studied by individuals in the future.

Field work can be followed by analysis of the data, report writing, journal writing, or classroom presentations.

CHAPTER 8:

RESOURCE MATERIALS AVAILABLE

This section is a database of materials (books, videos, films, etc.) on the subject of archaeology which would be of interest to educators. Many of these resources would be more useful for teachers in developing their own curriculum, than for students in acquiring an introduction to the subject. Where the information is available, the suggested target group has been specified.

FACT SHEETS

Alberta Culture Historic Sites Service

The Historic Sites Service, in cooperation with the Archaeological Survey of Alberta, has designed a series of brief fact sheets to complement Head-Smashed-In Buffalo Jump Interpretive Centre programs. Western Heritage Services has obtained permission to copy and distribute these fact sheets (see Chapter 9 for more distribution information).

Archaeology

This is a good introduction to archaeology and how the science has been applied to this important site.

Ethnography and Ethnology

The importance of ethnographic and ethnologic information in interpreting precontact archaeological sites is discussed.

The Plains People of Southern Alberta: The Blackfoot

Although the Blackfoot probably never moved very far into Saskatchewan, this brief description of their life style and how it adapted to changing seasons and conditions is a good example of a Plains Indian culture.

Plant and Animal Resources

This fact sheet describes the different plants and animals used by Plains Indians and what they were used for.

The Plains Bison

This fact sheet describes the plains bison, characteristics of its behavior, and its importance to the Plains Indians.

Hunting Techniques

Five different precontact methods for hunting plains animals, particularly bison, are described. Each depended upon a knowledge of animal behavior and the environment.

The Anatomy of the Jump

Although describing Head-Smashed-In in particular, this can be used in discussing the characteristics shared by successful buffalo jumps, and the evidence that remains for archaeologists to uncover.

Archaeological Survey of Alberta

The Archaeological Survey of Alberta has produced an excellent series of four fact sheets for educators. Although they contain information specific to Alberta, much of the material is applicable to Saskatchewan. The fact sheets are available for the cost of copying and mailing from Western Heritage Services (see information in Chapter 9).

Alberta Archaeology in the Classroom: A Resource List for Teachers

This is a detailed up-to-date resource list which contains audio-visual materials, print materials, films and slide sets, multimedia kits, and teacher references.

Archaeology as a Career

This contains detailed information about the nature of archaeology as a career and how best to pursue it. It also contains suggestions for activities for students in grades 9-12.

Dig and Discover: Archaeological Excavation for the Classroom

Details of excavation methodology, artifact analysis, and how best to plan and conduct a simulated excavation are discussed. This fact sheet is highly recommended for anyone wishing to embark on a simulated excavation, or anyone wishing to devise other activities which develop excavation skills.

Prehistoric Technology

Alberta's prehistory and early history are detailed, followed by a discussion of precontact tools and how they were made, and suggested classroom activities.

Woodland Cultural Centre

This centre publishes a number of education materials about Iroquois peoples past and present. The following books can be obtained by sending $5.00 per volume plus $5.50 shipping and handling to

The Woodland Cultural Centre
P.O. Box 1506, 184 Mohawk Street
Brantford, Ontario
N3T 5V6

Longhouse of One Family

Woodland Indian Agriculture

Woodland Indian Foods

Native Clothing

Woodland Indian Games

Reserve Communities: A Six Nation History Unit
($10.00 for this volume)

VIDEOTAPES AND FILMS

ACCESS Alberta

The following videos were produced by ACCESS Alberta. They can be obtained by contacting ACCESS at 1-800-352-8293.

Head-Smashed-In: A Buffalo Hunt

ACCESS produced this programme which explains the mechanics of a successful bison jump, using Head-Smashed-In as the location. (1984, 30 min.)

Spirits in Stone

In this programme, archaeologists explain stone features such as tipi rings, medicine wheels and rock art. (30 min.)

British Broadcasting Corporation

The Footsteps series, by the BBC and run on the Arts and Entertainment Network are valuable videos on archaeological subjects. Titles of archaeological interest include:

Australia's Twilight of the Dreamtime

Lost City of the Incas

Images of Another World

Mysteries of Mankind

Children of Eve

Official copies of these programs can be obtained by contacting:

British Broadcasting Corporation (BBC)
Broadcasting House
London, England
W1A 1AA

Cable Regina and the Saskatchewan Archaeological Society

Discovering Saskatchewan's Past

This valuable series of twenty half-hour programme's were produced in 1987 to 1989. They deal with almost every aspect of Saskatchewan archaeology. Lists of titles and copies of the programmes are available for loan to members from the Saskatchewan Archaeological Society business office (see Chapter 9). Sales of the copies can also be arranged.

Museum of Natural History

Two films were produced in the late 1970s by the Museum on the topic of archaeology. Both were aimed at general audiences. They are available for loan from

Dr. Margaret Hanna
Curator of Archaeology
Saskatchewan Museum of Natural History
2340 Albert Street
Regina, Saskatchewan
S4P 3V7

Carlton's Buried Past

This film describes the archival research and archaeological excavation that was necessary to accurately reconstruct the fort at Fort Carlton Historic Park. It provides a history of the fort, from its establishment in 1810, through its destruction in 1885 and to its reconstruction. The film is a good illustration of how archaeology can act as an important tool in understanding the history of an area. (25 min. 55 sec.)

The Past in Place

This film explains the importance of archaeological site preservation. Because archaeologists are trying to maximize the information they gather about a site, they must study artifacts in context. That is why they dig carefully and record detailed notes. If sites are disturbed, whether they are eroded by nature or destroyed by human actions, most of that information is lost. (18 min. 33 sec.)

Wanuskewin Heritage Park

The Secrets of Wanuskewin

This videotape presents an introduction to the Wanuskewin Heritage Park. Although the archaeology at the park is mentioned, the video focuses upon the spiritual significance of the site to the Indians past and present. (1987, video, 25 min.). It is available through the Wanuskewin Heritage Park Office (see Chapter 9).

National Film Board of Canada

The National Film Board distributes a number of films and videos dealing with archaeological topics. The regional office is located at 424 - 21st Street E, Saskatoon, but films are also available through many public libraries in the province. Phone the office (975-4245) to inquire about availability and rental costs.

The Dig

This film highlights methods used by one British Columbia highschool teacher to bring archaeology alive for his students through excavations of simulated sites and innovative classroom exercises. (1990, film or video, 22 minutes)

The Land that Devours Ships

Underwater archaeology is the topic of this programme; it follows archaeologists as they explore the H.M.S. Breadalbane, that sank in the Arctic Ocean in 1853. (1984, film or video, 58 min., 15 sec.)

The Lost Pharaoh: The Search for Akhenaten

Canadian archaeologist Dr. Donald Redford pieces together the life of the pharaoh Akhenaten. (1980, film or video, 56 min, 35 sec.)

The Mystery of Bay Bulls

Parks Canada's underwater archaeological excavation of Sapphire, a 300 year old frigate, is followed. (1979, film only, available from Winnipeg, 13 min., 58 sec.)

The Vinland Mystery

The only Norse settlement in North America, L'Anse Aux Meadows, is the subject of this archaeological investigation. (1984, film and video, 28 min., 59 sec.)

National Geographic Society

The National Geographic Society covers archaeological subjects regularly in its magazine and in its television programs. For more information, contact:

National Geographic Society
17th and M Streets, N.W.
Washington, DC 20036
phone number: (202) 857-7000

Public Broadcasting Service (PBS)

Programs such as NOVA and Odyssey on PBS often deal with archaeological themes. Although expensive, these three interesting videos are available for sale from

Public Broadcasting Service (PBS)
1320 Braddock Place
Alexandria, Virginia.
phone number: (703) 739-5000

Buried in Ice

From the Nova series, this is a documentary about the multidisciplinary study of the graves of individuals involved in the failed Franklin expedition in search of the Northwest Passage. Suitable for highschool students. (1988, 60 min).

Other People's Garbage

This is one of the Odyssey series. Archaeologists, anthropologists, and historians learn about another way of life from the things it threw away. Suitable for grades 7-12. (1984, 60 min).

Seeking the First Americans

Another in the Odyssey series, archaeologists across the United States search for clues about the first North Americans. Suitable for high school students. (1984, 60 min).

Saskatchewan Education and the Canadian Broadcasting Corporation

A Fine Science

This video contains short clips of a number of research projects, not all archaeological. It provides a short introduction to Saskatchewan rock paintings, radiocarbon dating, the Tipperary Creek Site (in Wanuskewin Heritage Park), and the archaeological Collections Registration Program (1986, 30 min). It is available through the Resource Centre (see Chapter 9).

FILMSTRIP AND SLIDE SETS

McIntyre Media Limited

This company distributes filmstrips produced by other groups. They provide free previews of their materials. For catalogues, prices and distribution information, phone 1-800-268-1470 or write

McIntyre Media Limited
30 Kelfield Street
Rexdale, Ontario
M9W 5A2

Canadian Arctic Prehistory

Ontario Prehistory

The Prehistory of the Maritimes

The Prehistory of Newfoundland and Labrador

The Prehistory of British Columbia

Quebec Prehistory

These are part of the Canada's Visual History series of slide sets. Each set includes 30 colour 35 mm slides on the topic of the prehistory of a specific region in Canada. They are an excellent resource and good value at $45.00/set (subject to change). The accompanying teacher's guide contains an annotation for each slide, a bibliography and suggested classroom activities. They were produced by the National Film Board of Canada in cooperation with the Canadian Museum of Civilization. Suitable for grades 9 to 12.

Digging Up Canada's History

This set of four filmstrips, four cassettes, and a teacher's guide was produced by the National Film Board of Canada in cooperation with the Canadian Studies Directorate. They provide an overview of archaeology suitable for grades 7 to 12. Individual filmstrips are "Archaeologists in Action", "Head-Smashed-In Buffalo Jump, "Red Bay and the Basque Whalers", and "Acadian House". The set costs $219.45 (subject to change).

Discovering the Past

This set of three filmstrips, three cassettes, and three teacher's guides focuses on the Classical Archaeology of ancient European and Mediterranean civilizations. Individual filmstrips are "The Skills of the Archaeologist", "Digging Up History", and "Evidence in Writing".

To Know the Hurons

This kit contains four filmstrips, four cassettes, four teacher's guides, 20 colour 35 mm slides with notes, five replicas of Huron artifacts, eight student activity cards and two maps. It was produced in cooperation with the Canadian Museum of Civilization and teaches archaeology and Ontario prehistory through a discussion of an archaeological dig at a Huron site.

Canadian Indian People

This set of two filmstrips and audio tapes comes with a teacher's guide. The first of the strips is #503, Indian Arts and Crafts, which examines arts from precontact times until present (1976). The second is #504, The Medicine Wheel, examines the importance of the circle as a symbol. The strips are available from

E.T.H.O.S.
2250 Midland Avenue
Unit 9
Scarborough, Ontario
M1P 1G6.

Saskatchewan Archaeological Society

Studying Saskatchewan's Ancient Human History

The Saskatchewan Archaeological Society lends a set of 55 colour slides, 20 min. 30 sec. cassette tape, and transcription to interested individuals free of charge. The slide show provides an introduction to Saskatchewan archaeology by illustrating some of its famous sites and artifacts. The text is most suitable for grades 6 to adult. For more information or to make bookings, contact the Saskatchewan Archaeological Society (see Chapter 9).

ARTIFACT REPLICAS

There are companies that specialize in making realistic replicas of stone, bone, antler, and shell artifacts from various times and places. For catalogue or further information, contact

Lithic Laboratories
1103 - 405 - 5th Avenue North
Saskatoon, Saskatchewan
S7K 6Z3

Lithics Artifacts Casting Company
Susan Heller
198 Binnington Road
Buffalo, New York 14226

or

Lithic Casting Lab
Route 1, Box 102
Troy, Illinois 62294

MULTIMEDIA KITS

Dig 2

Jerry Lipetzky

This is an archaeology simulation game which includes 35 student guides, one teacher's guide with overview, a unit time chart, daily lesson plans, teaching options, student forms for reproduction, and directions. The game involves teams of students creating hypothetical civilization, making artifacts, and bury the artifacts which are then excavated and interpreted by another student team. Although first made available in 1969, the simulation has been so successful that a new version was issued in 1982. It is available from

Interact Publishers, Inc.
Box 997
Lakeside, California 92040

REFERENCES FOR TEACHING ARCHAEOLOGY IN SCHOOLS

As time goes by, more and more archaeologists and educators are discovering the benefits of introducing students to archaeological concepts at a young age. Periodicals and publications which provide ideas in curriculum development are becoming increasingly common.

PERIODICALS

Anthro. Notes

This is a National Museum of Natural History Newsletter for Teachers. It is published three times a year and is distributed free of charge. It contains articles about a variety of anthropological topics, suggested activities, reference materials, and summer fieldwork opportunities. To be added to the mailing list, contact

P. Ann Kaupp
Public Information Office
Department of Anthropology
Stop 112
Smithsonian Institution
Washington, DC 20560

Archaeology and Education

This international bi-annual newsletter became established in the Fall of 1989. It is a forum for archaeologists and educators to discuss their attempts at archaeological curriculum development, and includes concrete examples and information. It is available by subscription by writing

Archaeology and Education
Archaeological Resource Centre
c/o Danforth Technical School
840 Greenwood Avenue
Toronto, Ontario
M4J 4B7

Teaching Anthropology Newsletter

This Canadian periodical is published free of charge twice annually. It promotes pre-university anthropology by providing curriculum information to teachers, creating a forum for an exchange of ideas, and establishing a dialogue between teachers and professors of anthropology. The Fall 1990 (Number 17) edition was devoted to precollege archaeology, but most of the issues. To be added to the mailing list, contact

Teaching Anthropology Newsletter
c/o Paul A. Erickson, Editor
Department of Anthropology

St. Mary's University
Halifax, Nova Scotia
B3H 3C3

OTHER PUBLICATIONS

Archaeology and Education: A Successful Combination for Precollegiate Students

Edited by Karen Ann Holm and Patricia J. Higgins

This publication is an excellent collection of eleven articles by teachers and archaeologists and a valuable annotated bibliography. All illustrate how archaeology can be used in teaching K-12 students. The papers had originally been presented at meetings of the American Anthropological Association in 1983 and the XI International Congress of Anthropological and Ethnological Sciences. Although the publication is out of stock at the University of Georgia, Western Heritage Services has obtained permission to reproduce it and distribute it (see Chapter 9)

Can You Dig It? A Classroom Guide to South Carolina Archaeology

Nancy Hawkins, Stanley South, Tom Charles, and Margaret Walden

This useful manual is published by the South Carolina Institute of Archaeology and Anthropology and describes archaeological activities for teachers to use. It is intended for South Carolina educators (it lists sites and museums in the state, for example) but can be adapted to suit other areas. To obtain copies, contact

South Carolina Institute of Archaeology and Anthropology
Bruce Rippeteau, State Archaeologist
1321 Pendleton Street
University of South Carolina
Columbia, South Carolina 29208

Classroom Archaeology: An Archaeology Activity Guide for Teachers

Nancy W. Hawkins, 1984

This is a useful and comprehensive (180 page) educator's manual containing suggested resources and archaeological activities for students. Authorized copies are available for the cost of reprinting from Western Heritage Services (see Chapter 9).

Practicing Anthropology in Precollege Education

This is a special issue (Vol. 8, No. 31-4, 1986) of Practicing Anthropology. It contains a collection of fourteen articles by teachers and anthropologists about their efforts to bring anthropology into the classrooms of North America. Two of the articles are specifically archaeological, and include some curriculum ideas and suggested resources. It is available for $5.00 (US funds) from

The Society for Applied Anthropology
Business Office
P.O. Box 24083
Oklahoma City, Oklahoma 73124-0083

Proceedings 1988, American Society for Conservation Archaeology

Edited by A. E. Rogge and John Montgomery

The theme of this symposium was "Fighting Indiana Jones in Arizona", and papers dealt with many aspects of bringing archaeology to Arizona's public. Papers of particular interest to educators are "Archaeology is More than a Dig" by Shurban, and "Archaeology in the Classroom" by Benge and Miller, but the other papers will provide some general ideas for innovative curriculum development. Copies of the conference proceedings can be obtained from

American Society for Conservation Archaeology
c/o John Montgomery
Station 9
Eastern New Mexico University
Portales, New Mexico 88130

Project Archeology: Saving Traditions (P.A.S.T.)

This is a flexible multi-disciplinary curriculum currently being tested in the United States. It uses archaeology as a vehicle for emphasizing skills needed for science, mathematics, social studies and language arts. The target grades are right from grade 1 through high school. It is presented in three units: The *Artifact, The Site, and The Culture.* For more information about content and prices of the entire curriculum or individual units, contact

Sopris West, Inc.
1140 Boston Avenue
Longmont, Colorado 80501

Protection of Archaeological Sites

Patti Bell, 1987

This is a collection of twenty activities developed for K-8 students. Although most are specific for Arizona prehistory, they contain some useful ideas. Available for the cost of printing from

Patti Bell
P.O. Box 1858
Bozeman, Montana 59771

Sleuthing Through History: An Introduction to Archaeology

Although concentrating upon Old World archaeology, this collection of pencil and paper exercises are useful for introducing archaeology, its purpose, selecting which sites to study, dating techniques and artifact function. The package includes a teacher's guide and reproducible student activities. It is most appropriate for high school students, although it could be adapted for younger ones. It is available from

Social Studies School Service
10,000 Culver Boulevard
Post Office Box 802
Culver City, California 90230

Teacher's Resource Packet—Anthropology

This folder is available free of charge from the Smithsonian Institution. It contains background information, suggested activities, and resource lists for a variety of topics in anthropology—North American Indians, ethnicity, anthropological fieldwork in other societies, evolution, archaeology. It is available from the same source as Anthro. Notes.

BOOKS AND PERIODICALS

Archaeology

This is a magazine aimed at non-archaeologists which contains information about current research, new exhibits, books, and films. Travel guides published in spring issues each year provide information on sites in the Old and New Worlds that are open to the public for visits or volunteer opportunities. For subscription information, write

Archaeology
P.O. Box 50260
Boulder, Colorado 80321-0260

Archaeology and Public Education

This is a quarterly publication by the Society for American Archaeology: Committee on Public Education. It contains information about new publications about archaeology that are aimed at a general audience, public lectures, new archaeological curriculum, and other items of general interest. For more information or to get on the mailing list, contact

Ed Friedman
Bureau of Reclamation
Denver Federal Center
P.O. Box 25007
Attention D-5530
Denver, Colorado 80225-0007
phone: (303) 236-9026

Beatty, Owen and John Geiger
1988 Frozen in Time. Saskatoon: Western Producer Prairie Books.

This is a popular account of a multidisciplinary study of the archaeological sites that remain from the failed Franklin expedition in search of the Northwest Passage. It would make fascinating reading for high school students and adults.

British Archaeological News

This is a newsletter which contains information about current research, courses, and volunteer opportunities. It is available from

Council for British Archaeology
112 Kennington Road
London, England
SE11 6RE

Chu, J.
1982 Kidigger: Exercises in Critical and Creative Thinking Through Archaeology. Morestown, New Jersey (Box 402, Morestown, N.J., 08057).

This is a collection of 26 games and exercises that use archaeological techniques to develop children's creative and critical thinking skills. The activities, ranging from vocabulary exercises to practicing outdoor survival skills, are aimed at grades 1-7.

Cook, Barbara and Sturand Reid
1987 The Young Scientist Book of Archaeology. EDC Publishing, Tulsa, Oklahoma.

Although this publication has an Old World focus, it is a useful and stimulating introduction to archaeological techniques aimed at young teenagers.

Daniels, Steve and Nicolas David

1982 The Archaeology Workbook. University of Pennsylvania Press, Philadelphia.

This contains exercises based upon information from real excavations. It is suitable for high school students.

Devine, Heather

1989 Archaeology in Social Studies: An Integrated Approach. The History and Social Science Teacher, 24, 3, 140-147.

This article explores the many arguments for teaching archaeology at the K-12 level, ideas for field trip, excavation, and experimental archaeology activities.

Dyer, James

1983 Teaching Archaeology in Schools. Aylesbury, England: Shire Publications Ltd.

Although aimed at the British school system and archaeological opportunities, this book contains many useful ideas for activities and resource materials for use by teachers ($6.75).

Epp, Henry T.

1991 Long Ago Today. Saskatchewan Archaeological Society, Saskatoon.

This is the first book dealing with Saskatchewan archaeology and precontact times that has been written for a general audience. It tells the story of the earliest people in Saskatchewan and how we have learned about them through archaeology. It would be suitable for older students (grades 9 - 12).

Epp, Henry T. and Ian Dyck

1983 Tracking Ancient Hunters; Prehistoric Archaeology in Saskatchewan. Saskatchewan Archaeological Society, Regina.

This is an important introduction to Saskatchewan archaeology, although it is too technical for most pre-university students and is already somewhat dated. Although out of print, this book might still be available through libraries or occasionally in used book stores.

Fladmark, Knut R.
1978 A Guide to Basic Archaeological Field Procedures. Publication #4, Department of Archaeology. Vancouver: Simon Fraser University.

A comprehensive, step by step, guide to carrying out archaeological field investigations. Although rather detailed, this would be useful background for anyone attempting a simulated excavation who has never participated in actual archaeological fieldwork.

Gebhard, Krysztof M.
1985 Community as Classroom: A Teacher's Practical Guide to Oral Histories. Regina: Saskatchewan Archives Board. (3303 Hill Avenue, Regina, Saskatchewan, S4S 0X3).

This guide contains useful suggestions for organizing oral history projects. A copy of the guide was distributed in 1985 to each school with grades 7-12.

Hackwell, W. John
1986 Digging to the Past; Excavations in Ancient Lands. New York: Charles Scribner's Sons

This is a well illustrated book suitable for grades 5 and up. It introduces the reader to classical archaeology and its techniques.

Helgason, Gail
1987 The First Albertans. Edmonton: Lone Pine Publishing.

This popular book about Alberta archaeology was initiated by the Archaeological Survey of Alberta. It successfully brings the archaeological record to life, as the prehistory and early history of Alberta is described and illustrated in drawings which are both accurate and well-executed. Although the book was not written specifically for children, it could be enjoyed by students in grades 7-12. It is available through the Den of Antiquity (see Chapter 9).

Hole, Frank and Heizer, Robert F.
1977 Prehistoric Archaeology: A Brief Introduction. New York: Holt, Rinehart, and Winston.

This is a widely used introductory text on archaeology aimed at university level students.

Jones, Tim E. H.
1988 Annotated Bibliography of Saskatchewan Archaeology and Prehistory. Saskatoon: Saskatchewan Archaeological Society.

This is an important collection of titles of interest to Saskatchewan archaeology, with index and annotations. Most of the references are technical reports but the collection also contains popular journal and newspaper articles. It is available through the Den of Antiquity (see Chapter 9).

Knoll, Patricia C.

1990 Listing of Education in Archaeological Programs: The LEAP Clearinghouse, 1987-1989 Summary Report. Archaeological Assistance Division, National Park Service, U. S. Department of the Interior

This publication is a catalogue of information contained in a computerized database compiled buy the National Park Service. The LEAP Clearinghouse contains information about public education ventures in the United States, from curriculums, to films, to newspaper articles, to public participation excavations. Contacts for all ventures are listed along with a description of the product or event. To obtain a copy of the catalogue, contact

Archaeological Assistance Division
National Park Service
U. S. Department of the Interior
P.O. Box 37127
Washington, DC 20013-7127

Linnamae, Urve and Tim E. H. Jones (eds.)

1988 Out of the Past. Saskatoon: Saskatoon Archaeological Society.

The Saskatoon Archaeological Society produced this book which explores the prehistory and early history of the Saskatoon area, through descriptions of some of its most important archaeological sites. The book is aimed at readers who already have some knowledge of archaeology, but could provide useful information for upper level students and teachers.

Macaulay, David

1979 Motel of the Mysteries. Boston: Houghton Mifflin.

This is a humorous account of a fictional excavation of a 20th century site in the year 4000 A.D. High school students could use this book as the basis for discussions about archaeology and how assumptions influence the interpretations that are made.

McGhee, Robert

1989 Ancient Canada. Canadian Museum of Civilization, Ottawa.

This is a beautifully illustrated volume describing sites across the country.

McNett, Charles W. Jr., Louana M. Lackey, and Ann S. Ferren
1985 Artifacts, Burials, and Computers: Teaching the ABC's of Archaeology Through New Curriculum Modules, in Archaeology and Education: A Successful Combination for Precollegiate Students. Karen Ann Holm and Patricia J. Higgins (eds.), pp. 77-84. The University of Georgia, Anthropology Curriculum Project, Athens.

A series of ten self-contained modules, including teachers' guides, aimed at teaching American Indian Archaeology to middle school students are described and evaluated. Information about the modules, and requests for copies of the modules and teachers' guides should be addressed to

Charles McNett, Jr.,
Chairman
Department of Anthropology
The American University
4400 Massachusetts Avenue NW
Washington, DC 20016

Milanich, Jerald, and Susan Milbrath, editors
1989 First Encounters: Spanish Explorations in the Caribbean and the United States 1492-1570. University of Florida Press and the Florida Museum of Natural History, Gainesville.

These readable essays provide a blend of historical research and archaeology in an effort to illuminate the important events in the decades following 1492. They illustrate how archaeology can be used to illuminate historical problems. It would be suitable for upper level students.

Onderdonk, Richard
1986 Piaget and Archaeology. Archaeology. Nov/Dec: 80.

This article discusses the benefits of archaeological study to the cognitive development of students.

Past-Times

This bi-monthly newsletter is distributed with the Saskatchewan Archaeological Society Newsletter and is aimed at younger readers (grades 6 to 9). It contains a variety of activities, articles, stories, and contests on archaeological themes. It is available free of charge to members of the Saskatchewan Archaeological Society (see Chapter 9 for details).

Pickering, Robert B.
1987 I Can Be an Archeologist. Chicago: Children's Press.

This provides a general introduction to the kinds of activities performed by archaeologists and physical anthropologists. It is aimed at beginning readers.

Pokotylo, David
1988 Blood from Stone: Making and Using Stone Tools in Prehistoric British Columbia. Vancouver: University of British Columbia Museum Note No. 11.

This publication resulted from a travelling museum exhibit about stone tool technology. In bilingual text, it includes a good introduction to techniques for making stone tools, interpreting scatters of stone tools at archaeological sites, and how these tools are used today by northern native peoples. It is aimed at adults, but would also be useful for upper level students.

Putt, Neal
1991 Place Where the Spirit Lives. Winnipeg: Pemmican Publications Inc.

Although specific to Manitoba, this well-illustrated book combines stories from archaeology and oral tradition of Manitoba's First Nations peoples. The result is a tremendous source of information about lifeways in North America for the past 11,000 years. Suitable for grades 6 through 9.

Resource Management—Archaeology, Heritage Branch
1991 Avocational Archaeology Field Manual. Saskatchewan Community Services, Regina.

This is a booklet for non-professionals interested in doing archaeological research in Saskatchewan. It provides information on obtaining archaeological permits, recording sites, mapping features, and collecting and recording artifacts. It is available from the Heritage Branch of Saskatchewan Family Foundation (see Chapter 9).

Robbins, Maurice and Irving, Mary B.
1981 The Amateur Archaeologist's Handbook (3rd edition). Cambridge: Harper & Row.

This is a non-technical description of how to do archaeological fieldwork, from planning, surveying, excavating, and analyzing artifacts. It is aimed at adults, but could also be used by most high school students.

Saskatchewan Archaeological Society Newsletter

This bi-monthly newsletter is invaluable for keeping up with developments in Saskatchewan archaeology and opportunities for becoming involved. It is available free of charge to members of the Saskatchewan Archaeological Society (see Chapter 9 for details).

Smardz, Karolyn E.
1989 Toronto Students Dig Into Their Past! The Archaeological Resource Centre. Teaching Anthropology Newsletter. 14 (Spring): 2-7.

This article describes an elaborate archaeological program entirely funded by the Toronto Board of Education, and discusses the benefits of including archaeological research in pre-university education.

Snow, Dean R.
1990 The Archaeology of North America. New York: Chelsea House Publishers.

This is an introductory look at precontact archaeological sites and ancient cultures in North America. Suitable for ages 10 and up.

Stone, Peter and R. MacKenzie, eds.
1989 The Excluded Past: Archaeology in Education. London: Unwin Hyman.

This is a collection of papers which were presented at the 1st World Archaeological Congress in 1986. They explore the successes and failures around the world in bringing archaeology into the classroom. The title of the volume refers to the fact that much of human history was never written down—the history of precontact or indigenous peoples, the history of everyday living—and is overlooked in most history classes and textbooks. Archaeology is essential in telling the rest of the human story.

Such, Peter
1978 Vanished Peoples: The Archaic Dorset & Beothuk People of Newfoundland. NC Press.

This book describes cultures which, because of racism, did not survive long into the historic period. The information comes both from historical sources and from archaeological research. It is suitable for Social Studies 20 and 30. It is available from

Beaverbooks
150 Lesmill Rd.
Don Mills, Ontario
M3B 2T5

Tirrell, P. B.
1983 Archaeology for Elementary and Secondary Students, in Anthropology and Multicultural Education: Classroom Applications. Yolanda T. Moses and Patricia J. Higgins (eds), Athens, Georgia: The University of Georgia, Anthropology Curriculum Project. pp. 44-82. (zip code: 30602).

This article describes in detail two archaeology programs developed by the University of Oklahoma's Stovall Museum. The first is a sixth grade unit on prehistory which involves a simulated excavation, artifact analysis, and artifact reproduction. The second is a high school program in which students excavate at a site for two weeks under the supervision of Museum staff. An appendix contains a resource list and samples of classroom exercises.

Young Archaeology

This quarterly magazine is produced by the Young Archaeologists Club in Britain. It contains articles, field trip announcements, a list of pen pals, competitions, jokes, all aimed at young people. School subscriptions (3 copies of the magazine) are available for £7.00. For more information contact

Young Archaeologists Club
37 Micklegate, York
England, YO1 1PQ

CHAPTER 9:
PUBLIC ARCHAEOLOGY IN SASKATCHEWAN

The shortage of established curriculum materials and programs for use by Saskatchewan teachers is a problem. Several organizations are making attempts to improve the situation.

SASKATCHEWAN HERITAGE BRANCH

Through understanding how people have interacted with their environment in the past, we gain perspective on the modern world, realizing the ingenious ways humans have found to solve the problems of survival. Archaeological sites hold a key to the past, and are a resource to protect so that everyone can benefit from the information that they contain. In Saskatchewan, the Heritage Property Act was established in 1980 to preserve our archaeological resources for the benefit of all people, now and in the future. The Heritage Branch is the provincial government body dedicated to enforcing this Act.

Archaeologists at the Heritage Branch are responsible for reviewing developments in the Province and determining which ones will likely have a negative impact on the archaeological sites of an area. Those developments that threaten archaeological sites must be preceded by archaeological research in the area; this is paid for by the company doing the development. Archaeologists at the Heritage Branch must make sure that the necessary inventory of the area is done, and that any sites which are discovered are either studied thoroughly or else avoided by the developers.

An up-to-date inventory of all archaeological sites in the province is housed at the Resource Management—Archaeology program of the Heritage Branch. Included in the inventory is information about where the site is located, what the surrounding environment is like, and what the site contains. At present, over 10,000 sites have been recorded in the province.

The Provincial Government grants permits to individuals who want to excavate archaeological sites or collect artifacts. At present, only people holding Masters' degrees in archaeology, or who have equivalent experience doing research and reporting their findings, are qualified to excavate a site. People who do not meet those qualifications, but who can demonstrate that they are capable of carrying out the research, can obtain a Restricted Research Permit which allows them to survey and collect artifacts from the surface of a site. Archaeologists in the Heritage Branch are then responsible for making sure that the permit holder fulfils all of the permit requirements: recording sites, cataloguing artifacts, and submitting reports. Although all artifacts collected after the Heritage Property Act was established ultimately belong to the people of Saskatchewan, they may remain in the possession of the collector as long as they are properly recorded and the collection is made available to individuals wanting to study it. Collectors are encouraged to donate their artifacts eventually to a local or regional museum. The Museum of Natural History in Regina is the main repository for archaeological materials in Saskatchewan, and forms another part of the Heritage Branch (see "Saskatchewan Museums," below).

If someone should accidently discover an archaeological site, they should not disturb it. Once disturbed, some of the information which a site contains is lost forever. Any questions about sites or artifacts that have been discovered, questions about recording sites or artifacts, or questions about the archaeological resources in the province, should be directed to

Resource Management—Archaeology
Saskatchewan Heritage Branch
3211 Albert Street
Regina, Saskatchewan
S4S 5W6
phone: 787-5772.

SASKATCHEWAN ARCHAEOLOGICAL SOCIETY

The Saskatchewan Archaeological Society (SAS) is a group of individuals, professional archaeologists and non-professionals, who share an interest in archaeology. Chapters of the Society are located throughout the province, meeting on a regular basis for public lectures and occasional field trips to local archaeological sites.

The SAS is involved in many public education ventures. Their Regional Archaeological Volunteers program is a network of knowledgeable amateur archaeologists across the province who are committed to providing information about archaeology to anyone who is interested, and to protect the archaeological resources in their area; they are often available to come and talk to classes or accompany them on field trips to archaeological sites, although they do not have the authority to conduct archaeological excavations.

Long Ago Today, a popular book about Saskatchewan archaeology and life during the distant past, was published by the SAS. It is aimed at people who have no experience with archaeology. A new Certification Program provides weekend and summer opportunities for taking short seminars and obtaining practical training in a number of different archaeological specializations. The Society also offers an annual field school, held at an archaeological site in the province, which provides non-professionals with instruction in archaeological field and laboratory techniques.

The Society's bi-monthly newsletter and annual journal contain up-to-date articles about the archaeology of the province, and often advertise opportunities to visit or volunteer on archaeological sites. Distributed as a bi-monthly supplement to the newsletter is Past-Times, a periodical about archaeology aimed at young readers.

The Den of Antiquity, a small bookstore located in the Society's business office, carries titles of archaeological interest. Although some of these are fairly technical in nature, others were written with non-archaeologists in mind. A complete title and price list is available from the Society. Some of the publications mentioned in Chapter 8 are sold through the Den of Antiquity, while others can be found in the SAS library which is also located at this office.

For more information about the Society or Saskatchewan archaeology in general, contact

Saskatchewan Archaeological Society,
#5 - 816 1st Avenue North,
Saskatoon, Saskatchewan
S7K 1Y3
phone: 664-4124.

WANUSKEWIN HERITAGE PARK

Wanuskewin Heritage Park opened to the public in June 1992 to rave reviews. It is located 3 km north of Saskatoon. The visitor centre interprets the history and culture of the Northern Plains Peoples from precontact times to present. Within the park are 21 archaeological sites. The self guiding outdoor tours take the visitor past a medicine wheel, buffalo jumps, tipi rings and buffalo pounds. School tours can also be booked. Pilot versions of curriculum materials targetted at Grade 4 Social Studies have recently been developed to compliment tours to the site or to be used independently. Other materials are being developed on an ongoing basis (including Grade 9 Social Studies materials). For more information, contact:

Wanuskewin Heritage Park
R.R. #4
Saskatoon, Saskatchewan
S7K 1M7
phone: 931-6767.

WESTERN HERITAGE SERVICES

The archaeologists at Western Heritage Services, Saskatoon were responsible for putting together this handbook. The Saskatchewan School Trustees Association has provided every school board in the province with a copy which can be copied as needed for individual use. Copies can also be obtained by contacting

Maureen Rollans
Western Heritage Services
563 - 5th Avenue North
Saskatoon, Saskatchewan
S7N 2R1
phone: 975-3863

Western Heritage Services has also been committed to making archaeological research more accessible to the general public and schools in particular. In Chapter 8, it was indicated that some of the resources are available through Western Heritage Services. In order to obtain authorized photocopies of the original materials, or for more information about the Western Heritage's archaeological services, contact Maureen at the address above.

Charges for authorized photocopies are determined as follows: postage plus $0.10 per page (these may be reduced with large orders). You will be sent an invoice which is to be paid upon receipt of materials.

The titles that are in the Western Heritage Services Library are as follows:

From the Archaeological Survey of Alberta:
Alberta Archaeology in the Classroom: A Resource List for Teachers (19 pp.)
Archaeology as a Career (12 pp.)
Dig and Discover: Archaeological Excavation for the Classroom (26 pp.)
Prehistoric Technology (21 pp.)

From the Alberta Culture Historic Sites Service:
Archaeology (7 pp.)
Ethnography and Ethnology (3 pp.)
The Plains People of Southern Alberta: The Blackfoot (3 pp.)
Plant and Animal Resources (4 pp.)
The Plains Bison (3 pp.)
Hunting Techniques (4 pp.)
The Anatomy of the Jump (4 pp.)

Archaeology and Education: A Successful Combination for Precollegiate Students, edited by Karen Ann Holm and Patricia J. Higgins (116 pp.)

Classroom Archaeology: An Archaeology Activity Guide for Teachers, by Nancy W. Hawkins (p. 179)

SASKATCHEWAN MUSEUMS

There are several hundred museums in Saskatchewan. The main repository for archaeological materials in Saskatchewan is at the Museum of Natural History in Regina. Archaeologists at the museum occasionally undertake public excavations, and are available to answer questions about artifacts and archaeological sites. For more information contact

Museum of Natural History
2340 Albert Street
Regina, Saskatchewan
S4P 3V7
phone: 787-2815.

Local museums are also a valuable source of information about the history and precontact period of an area. Classroom trips to local museums can be rewarding, particularly when tied in with a specific unit of study. In addition, museums may have artifact collections which can be studied, or the staff may know of local collectors who can be contacted for information or artifact borrowing. Contact a museum in your area to find out about the services it can offer. For general information about Saskatchewan museums, contact

Museums Association of Saskatchewan
2205 Victoria Avenue
Regina, Saskatchewan
S4P 0S4
phone: 780-0297.

VOLUNTEER OPPORTUNITIES

Many sites around the world welcome visitors and archaeological volunteers. Some of these are developed archaeological sites with interpretive centres, such as Head-Smashed-In Buffalo Jump in southern Alberta. The Center for American Archaeology, Kampsville Archaeological Center (Kampsville, Illinois 62053) offers educational research programs for junior and senior high school students, non-professionals, and separate workshops for teachers.

Earthwatch is an organization which funds scientific field research projects on the condition that the project includes non-professionals as volunteers. Volunteers pay money to work for two weeks in the field of their choice. Each year, several archaeological projects are involved with the Earthwatch program. For more information, contact

Earthwatch
The Center for Field Research
680 Mount Auburn St
P.O. Box 403
Watertown, MA 02272.

Others archaeological excavations are primarily research oriented, but incorporate informal visitor and volunteer programs which vary greatly in their degree of elaboration. Usually volunteer programs are only open to people over a certain age (often sixteen or eighteen years). Magazines such as Archaeology and British Archaeological News (Council for British Archaeology, 112 Kennington Road, London, SE11 6RE) contain listings of opportunities for field experiences for non-archaeologists.

In Saskatchewan, opportunities for public involvement in excavations exist, but they are not available on a regular basis. Only 67 archaeological research permits were issued in 1989, and most of these were for small assessments of development impacts. Only a small percentage (about 15-20%) of the archaeological projects are of the scope that they can incorporate a public program. Often these programs are geared to a specific audience, such as members of Archaeological Societies. Those that are geared to a wider audience are generally advertised in local newspapers, museums, School Boards, and the Saskatchewan Archaeological Society Newsletter (see Chapter 8). The Saskatchewan Archaeological Society Office (664-4124) has an informal Volunteer Registry in an attempt to coordinate volunteer opportunities in the province.

FURTHER READING

More detailed information about public involvement in archaeology can be obtained by reading the following material. These resources are described in more detail in Chapter 8.

Epp, Henry T. and Ian Dyck
1983 Tracking Ancient Hunters; Prehistoric Archaeology in Saskatchewan. Regina: Saskatchewan Archaeological Society.

Heritage Resources—Archaeology
1991 Avocational Archaeology Field Manual. Saskatchewan Family Foundation, Regina.

Linnamae, Urve and Tim E. H. Jones (eds.)
1988 Out of the Past. Saskatoon: Saskatoon Archaeological Society.

Saskatchewan Archaeological Society Newsletter

CHAPTER 10:

GLOSSARY OF ARCHAEOLOGICAL TERMS

The entries below explain how terms used in archaeology and related subjects are defined for the purposes of this Handbook.

anthropology: the study of humans which can be divided into four specializations: *archaeology*, defined below, *cultural anthropology*, the study of living human groups, *linguistic anthropology*, the study of language in cultures, and *physical anthropology*, the study of human variation and evolution.

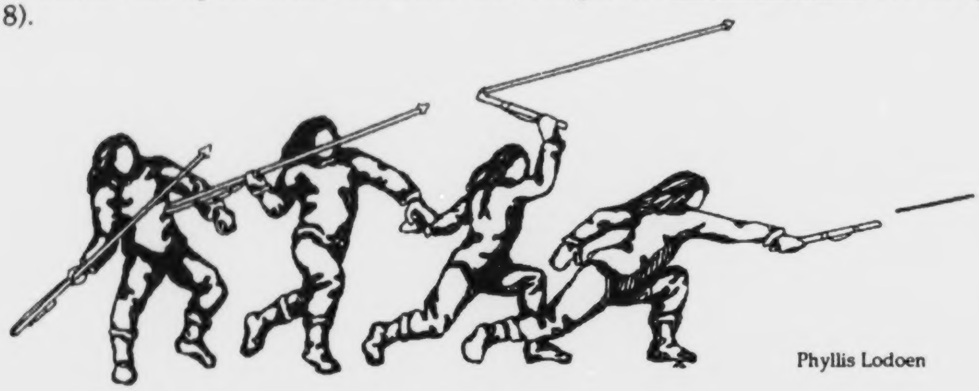
anvil: something that is used as a hard surface on which to pound. In pottery making, this term refers to the rounded stone or hardened clay form that is held on the inside of a pot while a paddle is used to hit the outside of the pot in order to shape it against the anvil. In stone tool manufacture, an anvil is a large flat stone placed upon the ground that other stones are hit against in order to break them.

archaeology: the study of past human activity by finding, describing and explaining the materials that people have left behind.

artifact: anything that has been made or changed by humans (for example, a spear point, piece of pottery, broken bison bone).

assessment: the testing of an archaeological site in order to determine its nature and research potential.

atlatl: the Aztec word for a spear thrower or throwing board (see diagram below, which is base upon an illustration in Gail Helgason's First Albertans, see Chapter 8).



Phyllis Lodoen

atlatl dart: a lightweight spear that was thrown using an atlatl.

B.P.: precisely, this stands for "before physics" or before 1950 when Carbon 14 dating was developed, but it is commonly translated as "before present".

boreal forest: a broad belt of forest stretching across northern Europe, Asia and North America. Common trees are white and black spruce, birch, pine and fir.

Carbon-14 (C-14) dating: a method for determining the age of organic materials (like bone and charcoal) that relies on the natural decay of radio-active carbon-14 into carbon-12; also called **radiocarbon** dating.

catalogue: to identify and assign a unique number to each excavated artifact, much as books are identified in a library.

classification system: a means of organizing information or collections by dividing the whole into groups of items that share similar characteristics.

conoidal: a word used to describe a ceramic pot which is essentially cone shaped; it has a long body gradually narrowing to a rounded or pointed base.

context: the location of an artifact in relation to nearby materials (other features or artifacts, specific soil layer or type, etc.) that can shed light on the human activity associated with that artifact.

core: the part of a rock that is left over after a craftsperson has removed one or more flakes in order to make stone tools from them.

dating: determining the approximate age of an artifact or site.

absolute dating: assigning an age in years, using a method such as C-14 dating or thermoluminescence dating.

cross-dating: determining approximate age in years by comparing diagnostic artifacts, such as projectile points, to similar artifacts from sites at which absolute dates were obtained.

relative dating: determining the age of something in comparison with something else excavated at the same site, rather than in calendar years. The most common factor used in determining a relative age is that the deeper an artifact is found, the older it is in relation to more shallow artifacts at the site.

datum: a fixed arbitrary point from which all measurements during the excavation are taken, so that site maps can be drawn.

debitage: the flakes and shatter of stone which result from knapping.

diagnostic artifact: an artifact style or type which is exclusively found in sites of a particular age or culture (for example, an Oxbow point or Avonlea ceramics).

excavation (archaeological): both the process and the result of careful digging and recording of information at a site.

extinction: the death of all members of a species of plant or animal.

experimental archaeology: a specialization in which archaeologists attempt to replicate things they observe in the archaeological record in an effort to understand the human behavior represented in that record. For example, they might attempt to make a specific artifact using the materials that would have been available in the past, they might use artifacts in a number of ways in an attempt to reproduce the wear patterns observed in ancient artifacts, or they might engage in some activity and study the patterns in artifact distributions that result.

feature: a structure in the ground which cannot be removed from a site without disturbing some of the components and which is the result of a human activity (for example, a fire pit or a tipi ring).

field (data base): the smallest unit of information in a computer data base (see also record).

fieldwork: the stages of research—inventory, assessment and excavation— that take place in the outdoor world, in study areas and archaeological sites as opposed to the office, laboratory, or library.

fire-cracked rock (fcr): a stone which has cracked or broken as a result of being heated.

flake: a thin piece of stone which has resulted either from two rocks being hit together (percussion flaking) or from the use of a pointed bone or antler to press a small piece off a stone tool (pressure flaking).

grid: a pattern of squares that divide a site up into units, as though a piece of graph paper were draped over a site.

hammerstone: a rounded stone, showing characteristic signs of having been pounded on the ends, which is used to hit other smaller stones during knapping.

hearth: an area of ash, burned artifacts, and burned earth which was once a fireplace.

inventory: 1) finding archaeological sites, or 2) the file of known sites in an area.

jumping (as in bison jumping): a method of hunting which involves luring or driving a herd of animals over a cliff and to their deaths.

knapping: making or altering stone tools.

level: the vertical units of excavation.

arbitrary level: one with a pre-set depth that is independent of what is being excavated.

natural level: one consistent with the natural layers in the soil—whether the layering is due to human activity or the sequence of changing environments.

living floor: a level uncovered during excavation that represents the ground surface at the time that people occupied a site.

mapping: noting the provenience of an artifact or drawing a scale diagram of the position of an artifact or feature in a unit.

matrix: the non-artifacts which surround the artifacts in the ground—dirt, seeds, roots, etc.

ochre: an iron oxide which occurs naturally and is used by people as a natural pigment in paints and dyes. It is red or yellow in colour.

organic material: any material that was once part of a living organism, either plant or animal.

outcrops: bedrock that is exposed on the ground surface; no soil has developed on top of it.

palaeontology: the study of fossil animals.

paleoenvironmental studies: the study of sediments, plant or animal remains in order to interpret what the environment of a site was like in the past.

paleosol: a dark coloured soil layer that at one time was a stable ground surface covered with vegetation. The dark colour is the result of the decay of the vegetation and other organic materials.

petroglyph: a form of precontact art in which pictures are engraved onto rock.

pictograph: a form of precontact art in which pictures are painted onto rock.

Pleistocene Epoch: the Ice Age, that lasted from approximately 2 million years ago until 10,500 years ago.

plough zone: a layer of soil that has been churned by a farmer's plough.

pounding (as in bison pounding): a method of hunting which involved luring or driving animals into a corral structure where they are then killed.

projectile point: a worked piece of stone, bone or metal used to tip a spear, dart or arrow. The arrow points are commonly known as arrowheads.

provenience: the location of an artifact within a specific unit and level. This may be exact measurements (for example, 12 cm from N wall, 65 cm from W wall, 13 cm below surface of unit 63N 85W) or may be within a limited area (for example, level 2, northeast quarter of unit 63N 85W).

precontact: before contact with Europeans

prehistoric: before written records were kept about an area and its people.

precolumbian: anything prior to European contact (usually used in relation to the Spanish Conquest in Central and Southern America).

processing area: this is an area, usually associated with a nearby habitation site or a kill site, in which there is evidence that animals were butchered, and the parts were treated (depending upon the needs of the people at that time): hides were cured, meat was cut and often dried, bones were broken to extract marrow and boiled to extract grease, pemmican was made.

provenience: the location of an artifact in three dimensional space.

radiation: energy emitted by radioactive or unstable chemical elements such as uranium.

record (data base): a single entry in a computer data base. Each record contains a number of fields of information. For example, in a database of library collections, each book would be a separate record, and each record would contain fields of information such as the title, author, publisher, and date.

seasonality studies: because all environments change with the season, archaeologists can study the season that people visited a site by looking at environmental clues such as the presence of egg shell (at spring sites) or lots of saskatoon berry seeds (at late summer sites).

sherd: a broken piece of pottery.

site (archaeological): a location with evidence of past human activity. There are many types of sites commonly found in Saskatchewan:

habitation site: one which shows evidence of people doing a variety of activities associated with day-to-day living. It may actually have the remains of dwellings.

kill site: one which shows evidence that animals were killed at the site.

burial: a site with human remains. These sites are rarely excavated in Saskatchewan.

ceremonial site: a site with presumed spiritual significance, such as a vision quest site, rock art site, or a medicine wheel.

sterile: without evidence of human activity.

stratified: having more than one stratigraphic layers.

stratigraphy: the study of the layers in sediment deposits; these layers or strata are laid down by natural sources (eg. floods, mud slides, vegetation) or cultural sources (human activity). The thickness of particular strata had no direct relationship to age, since very large deposits can result from a single event.

superposition (the law of): a law which states that geological strata are deposited layer upon layer, and that therefore the deep strata are older than the more shallow strata.

survey (archaeological): the systematic search for archaeological sites.

temper: crushed material or sand that is added to clay in the process of making pottery. The temper adds strength to the resulting pot.

thermoluminescence: a method of absolute dating that determines the age of pottery, or other materials which have been heated to high temperatures.

transitional forests: the forest area lying between the tundra in the north and the boreal forest in the south.

trowel: a digging tool used by archaeologists which has a wooden handle and a diamond-shaped blade. This is the same kind of tool that bricklayers call a "pointing trowel".

uniformitarianism (law of): a general assumption that the forces acting in the world today (eg. gravity, erosion, human behavior) are basically the same ones that have acted throughout Earth's history.

unit: a square excavation area, usually 1 x 1 m or 2 x 2 m in size.